AN EVALUATION OF THE CONTRIBUTION OF CORPORATE ENVIRONMENTAL CODES OF CONDUCT TO SUSTAINABLE DEVELOPMENT IN THE MINING SECTOR

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Thesis presented in partial fulfilment of the requirements for the degree of Master of Philosophy in the Faculty of Arts and Social Sciences at Stellenbosch University

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March 2021

ABSTRACT

Mining and associated industries have a major and lasting impact on the environment and the mines' growth and development decisions could have a positive or negative impact on the continued existence of the natural environment. Ideally, mining activities must be executed in such a way that the environmental impact is minimised or avoided, by developing sustainable practices. The environmental code of conduct, which is not a legally binding document, but a concious choice by the organisation, is one way in which organisations can manage the extent to which environmentally sustainable design methods will be considered and integrated into their processes.

This research study aims to determine the contribution of such corporate environmental codes of conduct to sustainable development in the mining sector in practice. Following a literature review of environmental ethical theories, sustainability and corporate social responsibility, a questionnaire was used to answer this research question. It was found that while many companies are saying the right things and moving forward in terms of incorporating sustainability into their policies and codes of conduct, their actions do not always match their words, and legal compliance remains the primary concern.

SAMEVATTING

Die mynbou bedryf het 'n groot en blywende impak op die omgewing, en dus kan hul groei- en ontwikkelingsbesluite 'n blywende positiewe of negatiewe impak hê op die voortgesette bestaan van die natuurlike omgewing. Die ideaal is dat mynbou aktiwiteite op so ‘n manier uitgevoer word dat die omgewings impak vermy of geminimaliseer word deur die paslike ontwikkeling en implimentering van volhoubare praktyke. Die organisasie se omgewingsgedragskode, wat nie 'n wetlik bindende dokument is nie, maar eerder 'n voorkeurkeuse van die organisasie is, is een manier om die mate waartoe omgewingsvolhoubare ontwerpmetodes oorweeg en geïnkorporeer word, te beïnvloed.

Hierdie navorsingstudie het ten doel om te bepaal of korporatiewe omgewingsgedragskodes 'n bydrae lewer tot volhoubare ontwikkeling in die mynbousektor. Na ‘n aanvanklike literere oorsig van omgewings etiese teorieë, omgewings volhoubaarheid en korporatiewe sosiale verantwoordelikheid, is van ‘n vraelys gebruik gemaak om die navorsing te ondersteun. Daar is gevind dat, alhoewel baie maatskappye die regte dinge sê, en vordering maak in terme van die integrasie van volhoubaarheid in hul strategieë en hul soeke na oplossings om hul omgewings impak te verminder, hul dade nie ooreenstem met hul uitsprake. Maatskappye maak wel vordering in terme van die integrasie van volhoubaarheid in hul strategieë en hul soeke na oplossings om hul omgewingsimpak te verminder. Dit is egter nie op 'n vrywillige basis gegrond nie en die nakoming van wetlike vereistes bly steeds ‘n problem.

ACKNOWLEDGEMENTS

I would like to acknowledge Dr Susan Hall for her continued support, professional direction, and outstanding mentorship to helping me become a contributor to the field of environmental ethics. Every respondent who took time to participate in this research study and ensured that I have the correct data to come to a conclusion, I thank you. I would like to take this opportunity to to express my sincere gratitude to all the individuals and institutions who showed interest and assisted and motivated me throughout this research study. It certainly would not have been possible without your enthusiasm, advice, and direction.

Ek dra die studie op aan Carmen, Cariné, Corneli en Charl, die inspirasie vir my studies en my lewe. Julle – as ondersteuners en kritici, het my in staat gestel om lang ure te sit en probeer om ‘n produktiewe student en navorser te wees. Dankie C4 vir julle aanmoediging deur al die hoofstukke van die studie.

Louis Pasteur said there is more philosophy in a bottle of wine than in all the books written. I am inclined to disagree as I also had to consult numerous books, documents and research papers writing this thesis.

LIST OF ABBREVIATIONS

BBBEE:	Broad Based Black Economic Empowerment
BEE:	Black Economic Empowerment
CEO:	Chief Operating Officer
CER:	Centre for Environmental Rights
CEnR:	Corporate Environmental Responsibility
CSR:	Corporate Social Responsibility
CSI:	Corporate Social Investment
EIA:	Environmental Impact Assessment
ESG:	Environmental, Social, Governance
EU:	European Union
HR:	Human Resources
ISO:	International Organisation for Standardisation
MEA:	Millinium Ecosystem Assessment
NEMA:	National Environmental Management Act [No 107 of 1998]
OECD:	Organisation for Economic Co-operation and Development
SANS:	South African National Standards
SLP:	Social and Labour Plan
TBL:	Triple Bottom Line
UN:	United Nations

UNEP: United Nations Environmental Program

WEF: World Economic Forum

WRI: World Resources Institute

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CHAPTER 1: INTRODUCTION

"City life was getting us down so we spent a weekend out town
Pitched our tent on a patch of ground down by the river
Lit a fire and drank some wine you put your jeans on top of mine
I said: Come in the water's fine
Down by the river" (*Down by the river*. Lyrics: Albert Hammond, 1972)

1.1 Introduction

It is increasingly the case that the mining sector purports to incorporate the environment into its decision-making. For example, all businesses, including mining, in South Africa that are accredited to a National or International Environmental Standard, such as South African National Standards (SANS), or the International Organisation for Standardisation (ISO), are required to have an environmental or sustainability policy in place. Corporate offices tend to state their commitment to sustainable development in annual and other reports (Exxaro Resources Limited: Integrated Report, 2018 and AngloGold Ashanti: Sustainability Development Report, 2018). Frequently, however, negative reports on environmental management and misconduct are published in the media.

In its report entitled 'Full Disclosure; the Truth about Corporate Environmental Compliance in South Africa' (2015), the Centre for Environmental Rights (CER), a non-profit environmental justice service, investigated the extent to which 20 listed South African companies complied to South African environmental laws between 2008 and 2014. This report found that all the companies investigated were in breach of environmental laws. According to the CER, these are companies that "have regularly been hailed as shining examples for their approach to managing environmental, social and governance" issues. The report further stated that the information provided by the companies to their shareholders, on their environmental impacts and non-compliance, were often "either misleading or so minimal as to make it impossible to verify claimed commitments to sound environmental management" (2015: 2).

The CER report echoes my own experience in corporate environmental affairs in South Africa. Past involvement in a greenfield iron ore development, attendance of formal

training sessions and conferences on Business and Biodiversity and current involvement as an interested and affected person in environmental assessment studies for mine developments, made me aware of an apparent gulf between what corporate environmental codes of conduct were stating and what is happening in practice. The apparent dichotomy in the rhetoric of the key players in the mining community and that of environmental auditors, government environmental departments and personal observations prompted the questions as to whether environmental codes of conduct and related policies really contribute towards sustainable development. Two problems regarding mining corporate environmental policies may be identified, which have to do with the drafting of environmental codes of conduct and policies on the one hand, and the execution of these codes and policies on the other.

The drafting of environmental codes of conduct and policies is usually influenced from an economic point of view, where the measurement of gains and losses is expressed in monetary terms. Partridge (2003:433) points out that there are various problems with this cost-benefit approach. First, by equalling all values into cash, (a non-moral value), ethics is factored out of policy drafting. The second concern is that cost-benefit analysis measures promote consumer preferences and exclude community/citizen values. The third problem is that commercial analysis is descriptive (indicating what the public values) rather than prescribing what they should value. Ultimately, by measuring value in terms of the current cash value, the future is discounted. This does not adequately consider future generations, including non-sentient individuals and groups.

Regarding the execution of environmental codes of conduct and policies, there appears to be a mismatch between the commitments contained in such policies and their execution. As previously noted, the CER 2015 ‘Full Disclosure’ report documents numerous examples of corporate environmental mismanagement, and their 2016 report “provides further evidence that some listed South African companies are committing serious violations of environmental laws and are failing to disclose this adequately to shareholders”. ‘Full Disclosure’ 2016 included new assessments of ten listed South African companies with substantial environmental impacts over the period 2011 to 2016,

and highlighted Glencore, South32, Kumba Iron Ore and Coal of Africa Limited as being in violation of environmental laws, although the 2015 Full Disclosure Report notes that a third of companies assessed had “improved reporting and disclosure on environmental compliance in their annual reports”. This included major South African companies such as AECI, DRD Gold, Impala Platinum, PPC, Sappi, and Sasol.

The CER 2015 Report also found that standard reporting requirements for environmental compliance are lacking, and that companies in South Africa are free to report environmental compliance in a manner of their choice. This is supported by De Villiers & Van Staden (2006) and Loate *et al.* (2015:34). This lack of detailed reporting prevents stakeholders from assessing the environmental risks posed by a company’s operations and evaluating its environmental compliance. As a result, these issues are often ignored. This supports “the perception held by many South African companies that investors do not pay attention to environmental reporting” (CER 2016). The wide variety of different reporting frameworks and guidelines that are used by companies in their reporting seems to have aggravated the problem of reporting environmental compliance.

Furthermore, the CER (2016:1) “provides more evidence that some listed South African companies are exposing investors to potentially devastating risk by committing serious environmental violations and failing to disclose this adequately to shareholders”, which is concerning as CER (2016:1) argues that a company’s track record of compliance with environmental laws is one of the most important indicators of the environmental risk posed by its operations. Disturbingly, the 2016 CER report also noted that decision-making about the disclosure of environmental non-compliance is largely determined by the likely financial implications for the company and its investors.

A more recent CER report entitled “Full Disclosure 2019: The Truth about Mpumalanga Coal Mines Failure to Comply with their Water Use Licences”, paints a sombre picture of gross abuse, contraventions and water pollution by the mines, as well as repeated failures by the National Department of Water & Sanitation and allegedly independent auditors to identify these violations. The Centre noted that “[f]or these operations, it appears that the

regulatory system…has effectively disintegrated" and that "instead of ensuring the protection of water resources", which is morally the correct thing to do, "companies and independent auditors are complicit in taking advantage of the regulatory breakdown" (CER 2019).

These problems around disclosure of environmental non-compliance are particularly concerning in a context where an increase in poaching activities, illegal dumping, illegal mining, surface and groundwater pollution and development without authorisation in South Africa is disturbing but common daily news. The National Department of Environmental Affairs and Tourism reports that 897 unlawful commencements of Listed Activities in terms of the National Environmental Management Act (NEMA)[1], Act 107 of 1998, (Republic of South Africa, 1998) occurred, and for the period 2015/16, this increased to 965 incidents (The National Environmental Compliance and Enforcement Report of the reporting period 2014/15 and The National Environmental Compliance and Enforcement Report of the reporting period 2015/16).

In relation to the most prevalent forms of environmental crimes committed by mines and industry, the National Department of Environment's National Environmental Compliance and Enforcement Report of the reporting period 2016/17 continued to display a similar pattern with respect to the environmental crimes detected. The unlawful commencement of listed activities in terms of the Environmental Impact Assessment (EIA) Regulations is still the most common form of non-compliance.

[1] NEMA is specifically aimed at: "achieving co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state"; providing for "the administration and enforcement of other environmental management laws; and providing for matters connected therewith". As such, NEMA is the enactment of Section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996 (Republic of South Africa, 1996) which states that: "Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".

These trends clearly suggest that, despite professed commitment to environmental codes of conduct and declared compliance to international environmental standards on letterheads, unethical conduct continues in practice, is on the increase, and is not always adequately reported.

1.2 Problem statement

The inconsistencies and concerns discussed above regarding the motivation, interpretation, and application of environmental codes of conduct, led to the main problem statement which will be addressed in this thesis. I aim to investigate whether environmental codes of conduct and policies in fact contribute towards the achievement of sustainable development[2] and environmental care in an organisation, with specific reference to the mining sector. I will achieve this through a literature review and an empirical study.

1.3 Research aim and objectives

The objectives of this thesis are as follows:

i. To investigate if there are specific approaches towards the environment apparent in the approach of organisations to corporate social responsibility.
ii. To determine if approaches to corporate social responsibility take an anthropocentric, ecocentric, or balanced approach to environmental care.
iii. To investigate if corporate mitigation measures are adopted because of moral motivations or legal requirements.
iv. To determine the environmental ethical approach of employees and,
v. To determine if employees are sufficiently informed to make environmentally sustainable decisions.

The research area is focussed on the mine and mineral sector, as that is the sector which I have been involved with in my professional life, and with which I am most familiar.

[2] The meaning of sustainable development will later be explored in more detail, but is defined for the present as the “management of man-made and environmental capital to maintain the capability of satisfying the needs and aspirations of both present and future generations” (Fuggle and Rabie, 2003:31)

1.4 Research approach

This thesis includes a literature review, as well as empirical research in the form of a structured questionnaire. The literature review lays the foundation for the primary research, the stakeholder response analyses. The stakeholders included in the study include representatives from large South African companies, but also selected corporate environmentalists and an environmental lawyer. A self-administered questionnaire was distributed through SUnSurveys. The questionnaire consisted of two parts, with the first part gathering biographic information and the second investigating sustainable management practices used in the organisation. The responses received were statistically interpreted and presented.

1.5 Chapter layout

The layout of the chapters of the thesis will be as follow:

Chapter 1: Introduction

A brief introduction to the study has been provided in this chapter, as well as the background to, and motivation for this research study. The problem statement, research methods and research questions were also discussed.

Chapter 2: A synopsis of the nature of biodiversity loss and ecosystem degradation

Chapter 2 presents background information on weak implementation and execution of codes of conduct to support sustainable development. This is evident in biodiversity loss and ecosystem degradation, which is primarily driven by mining and other anthropogenic activities such as agriculture and compounded by unscrupulous activities not governed by ethical codes of conduct. This chapter will also investigate the perception of biodiversity loss amongst business leaders, and the tension that arises as a result of the fact that business, by its nature, focuses on short term gain to satisfy the maximum monetary needs of investors and owners, whereas sustainable development implies long term investment in social and green concerns with no tangible monetary gain.

Chapter 3: Environmental ethics

Chapter 3 will provide a brief overview of the field of environmental ethics, which arose as a response to an increasing awareness of the ecological impact of human activity. This chapter will discuss different environmental ethical theories and perspectives, in order to provide the background and vocabulary necessary to conduct an analysis of the environmental ethical approach followed by environmental codes of conduct.

Chapter 4: An overview of the concept of sustainable development

Chapter 4 will explore the term sustainable development/sustainability as a particular aspect of environmental ethics. This chapter expands on why sustainable development is important and provides an overview of the various interpretations of sustainable development in various contexts. An overview of the notion of sustainable development is essential in order to evaluate the extent to which corporate codes of conduct contribute towards such development.

Chapter 5: Concepts of Corporate Social Responsibility

This chapter will discuss the notion of Corporate Social Responsibility (CSR) and its implementation in South Africa as a requirement for sustainable business and the eventual annual sustainability report to shareholders and stakeholders. It will also examine different interpretations of CSR, and the proportional divide between social and environmental obligations therein.

Chapter 6: Research methodology

This chapter will present the research methodology of the empirical component of the research conducted in this thesis.

Chapter 7: Outcomes and interpretation of the questionnaire

In this chapter, the analyses of the responses received from the questionnaire will be provided with regards to the sustainable management practices used in the various organisations, the importance of sustainability in organisations, the structure of

sustainability in organisations, and the cost of sustainability management. These responses are evaluated against the principles of environmental codes of conduct.

Chapter 8: Research findings

Chapter 8 discusses the findings of the empirical component of the study, and my interpretation of these findings. It also concludes the study, provides suggestions for further research and highlights limitations.

1.6 Summary

In this chapter, background information regarding this research study has been provided, along with the problem statement and the research aims and objectives. It has been pointed out that many companies do have environmental policies and codes of conduct in place, but that they are often in breach of their own policies and the requirements of the South African environmental legislation, and this gives rise to the question as to whether these policies and codes in fact contribute towards sustainable development. To begin to explore this question, the next chapter will investigate the nature of biodiversity loss, ecosystem degradation and the perception of biodiversity loss amongst business leaders.

CHAPTER 2: A SYNOPSIS OF THE NATURE OF BIODIVERSITY LOSS AND ECOSYSTEM DEGRADATION

"Didn't feel too good all night
So we took a walk in the morning light
And came across the strangest sight down by the river
Silver fish lay on its side it was washed up by the early tide
I wonder how it died?
Down by the river" (*Down by the river*: Lyrics: Albert Hammond, 1972)

2.1 Introduction

As mining and mining related activities are one of the contributing activities to biodiversity loss, and the maintenance of biodiversity is essential for the sustainability of all life forms, this chapter will highlight the value of ecosystem services. It will discuss the extent of biodiversity loss and ecosystem degradation and the risks it poses for humankind. This chapter will also investigate the perception of biodiversity loss amongst business leaders.

2.2 The value of ecosystem services

The impact of human activity on biodiversity will have an impact on the environment to deliver the ecosystem services essential for human life. The term ecosystem services may be defined as 'the benefits people obtain from ecosystems', both natural and managed (MEA, 2005:28). Ecosystem functioning is positively impacted by species diversity, and reduced or altered biodiversity could lead to reduced ecosystem services and eventually pose a threat to food or water security, which affects not only the ecosystem, but also humankind (Wall & Nielsen, 2012).

According to the European Environmental Agency (EEA) (2010:7), ecosystem services, and the resultant benefits for society, depend on the quality of ecosystems. The assessment of ecosystem services can be problematic, both for those who attempt to make such calculations and those who use the results in decision-making, as it is now acknowledged that the non-market benefits that ecosystems provide must also be accounted for (EEA, 2010:14). Tietenberg (2006:36) divide ecosystem values into three categories: use value (food, fresh water), option value (nutrient cycling, carbon

sequestration, water purification) and non-use value (aesthetic, sense of place). Wall and Nielsen (2012) propose maintenance of ecosystem services as an additional approach to valuation.

Ecosystem services are often viewed as free and owned by no-one, but the ethical issues with regards to the value and consuming of ecosystem services remain unanswered (Wall & Nielsen, 2012). While biodiversity and ecosystem services often have unclear ownership and cannot be traded in the market, Fuggle and Rabie hold that they are nevertheless economic goods and services because of their limited supply, the impact of their availability on economic activities, and the benefits they confer on society (2003:29).

2.3 Biodiversity loss

Biotic diversity, biological diversity or biodiversity refers to the number and kinds of organisms on earth, the genetic variability among individuals within a single species of plants, animals, micro and submicro-organisms, and the number of species within a community of organisms. It also refers to ecosystem diversity within terrestrial, marine, and other aquatic ecosystems, and includes the ecosystem processes such as energy flow and nutrient and matter cycles that sustain life (Hawken, 2007:209; Miller & Spoolman, 2009:78; Tietenberg, 2006:74 and VanDeVeer & Pierce, 2003:650). Biodiversity loss therefore indicates “a reduction in genetic diversity within populations, and in the variety of habitats and ecological communities in which species occur” (EEA, 2010:7). The loss of biodiversity does not refer only to the loss of species, but also to compromised ecosystem functioning, which has detrimental effects on humankind and the non-human environment.

Two types of biodiversity loss can be identified. Natural biodiversity loss occurs where an area’s biodiversity grows and declines in accordance with natural cycles. This contributes to and determine an area’s biodiversity. Human driven biodiversity loss results from disruptions caused by human activities and tends to be more severe and permanent (Miller & Spoolman, 2009:87/193). Human actions such as forest clearing and grassveld transformation for agriculture and mining, wetland filling, stream channelling and dam,

road and township development are often seen as logical steps necessary for economic progress and human needs satisfaction. This leads to a substantial change in the ecology and ecological systems within a landscape or a region.

2.4 The significance of biodiversity loss and ecosystem degradation

As noted above, biodiversity loss does not only refer to the loss of species, but also to the loss of ecosystem functioning, either worldwide or within a specific localized habitat. Wall and Nielsen (2012) suggest that such a reduction may be temporary or permanent, depending on whether the underlying environmental degradation is reversible. The food web or food chain can be profoundly affected by site specific or wider changes in species composition, even when these changes are minor, as a reduction in only one species can detrimentally upset the entire chain. This could lead to a general drop in biodiversity, or probably an alternative stable state of an ecosystem with a biotic community not beneficial for other localised communities or humans, such as for example riverbanks or veld contaminated by alien invader species.

At the World Economic Forum (WEF) conference held in 2015 in Davos, Switzerland, the WEF listed in its Global Risk Report the water crisis, a failure of governments to take effective action on climate change, the loss of biodiversity, and man-made environmental catastrophes, such as the Fukushima power plant disaster, as four of the ten most important global risks. Of note is that the loss of biodiversity was not mentioned in any of the previous reports prior to 2015 (World Economic Forum Global Risks Perception Survey 2014). According to the report, a global risk is “an uncertain event or condition that, if it occurs, can cause a significant negative impact for several countries or industries within the next 10 years” (WEF Global Risks Perception Survey, 2014:12).

By comparing the 2015 risk report to the 2019 report, of note is that in 2015, 3 out of 10 risks fall into the environmental category, in comparison to 5 out of 10 in 2019. Man-made environmental disasters, and biodiversity loss and ecosystem collapse, are the 6th and 8th risks in 2019 in terms of probability and respectively in the 6th and 9th position in terms of impact. Both these risks are driven by human action. Five of the top 10 global

risks identified in terms of impact are in the environmental category compared to 2 in 2015.

In 2019, environmental risks made up three of the top five risks when ranked by likelihood. Of note is that some of the environmental risks identified also have an impact on other categories, such as the economic and societal categories (World Economic Forum Global Risks Perception Survey 2014 & World Economic Forum Global Risks Perception Survey 2018 -2019). This is because the loss of biodiversity and ecosystem degradation exacerbates many of the key challenges the world faces today, from fresh water provision to catastrophic climate change, regional conflict, and population growth and migration due to resource shortages (McCormick, 1997:114; Miller & Spoolman, 2009:185/239 and Tietenberg, 2006:271).

However, ecosystem services are still often excluded from decision-making processes in the boardroom and, as a result, “[b]iodiversity in the tropics has declined dramatically (by 30 percent since 1992), indicating severe ecosystem degradation”. This is largely due to deforestation related to illegal logging and the expansion of agriculture and mining activities (United Nations Development Program, 2012:55). It is estimated that, globally, more than 4,000 species are threatened by the intensification of agricultural activity, including more than 87% of a total of 1,226 threatened bird species (Nellemann *et al.,* 2009:65). The United Nations Environment Programme (2018: ix and 1-4) points out that illegal logging and forest crime have intensified and make up about 10 to 30% of the timber trade worldwide. In some countries, between 50% to 90% of the wood is estimated to come from illegal sources. All of this threatens finite natural resources.

Similarly the current rate of waste production and management, as well as the illegal trade in waste, causes vast pollution impacts on water, soil and air, and leads to significant environmental stress and a coupled impact on human health (Rucevska *et al.,* 2015:7/8). Soil erosion and soil degradation with the associated loss in biodiversity and ecosystem services is a “significant issue in South Africa with 60% of the land currently degraded and approximately 91% of South Africa potentially susceptible to desertification” (Hoffman

et al., 2009). This will have a negative impact on ecosystem services. Hoffman *et al.* (2009) calculated that “more than 0.7 million ha of land is degraded by soil erosion and 0.19 million ha is degraded by waste rock dumps and mining”. Some of the land degradation in South Africa is attributable to natural phenomena, but population growth, deforestation, overgrazing, mining, alien plant invasion and general acidification and pollution of soil are the main drivers (Hoffman *et al*., 2009).

The above impacts on ecosystem services are primarily driven by the need for economic growth and prosperity (Hoffman *et al.,* 2009) and could be ascribed to a lack of land ethics or knowledge by developers and the common citizen. The examples of biodiversity and ecosystem degradation, triggered by human activities, as discussed above, can be compared to environmental crimes, similar to the illegal trade in wildlife and forest products, illegal waste dumping and illegal mining.

In the case where a country’s laws and regulatory framework do not encourage sustainable development, there is little motivation for businesses or individuals to be concerned about protecting biodiversity and ecosystems. Therefore, it is likely that effective policies, regulations, institutions, and prosecution of perpetrators must be instituted to manage ecosystems and biodiversity sustainably, which requires political will. To avoid larger long-term costs associated with ecosystem loss and degradation, the value of ecosystem services must be recognised and incorporated into economic policies, local development plans and development and expansion plans of the production and mining sectors, in order to incorporate the costs of protecting and maintaining these services into financial frameworks (United Nations Environment Programme, 2018).

2.5 Biodiversity offset areas

Where biodiversity loss as a result of human economic activity cannot be avoided, biodiversity offsets serve as a mitigation strategy for the protection and conservation of biodiversity impacted upon by mining and other intrusive developments. The International Finance Corporation (IFC) (2012:42) defines biodiversity offsets as “measurable conservation outcomes resulting from actions designed to compensate for significant

residual adverse biodiversity impacts arising from project development" and advises that offset areas "be considered only after appropriate avoidance, minimization, and restoration measures have been applied" and proven not to be successful. The biodiversity offset must be constructed and executed to achieve quantifiable conservation outcomes, and a net gain of biodiversity is required, especially where habitats are critically endangered. The goal is "like-for-like or better", in other words, biodiversity offsets should aim to conserve the same biodiversity values that are negatively affected by the relevant project. However, in some situations, the impacted areas of biodiversity may be of a lower priority than other areas of biodiversity under greater threat, and in this case "it may be appropriate to consider an "out-of-kind" offset…where the offset targets biodiversity of higher priority than that affected by the project" (IFC, 2012:42).

2.6 Perceptions of biodiversity in business

As noted in the first chapter, one may argue that business, by its nature, focuses on short term gain in the interests of owners, investors, and shareholders. Sustainable development, however, implies long term investment in social and green concerns with no tangible or immediate monetary gain. The predicament is how to link these two poles in a way that will satisfy the needs of stakeholders on both sides. This section will explore the attitudes of business and business leaders to biodiversity and sustainability.

Miller and Spoolman (2009:612) describe an economic system as "a social institution through which goods and services are produced, distributed and consumed to satisfy people's needs". Within this system, three overarching types of capital are used to produce goods and services: natural capital provided by the earth's natural resources, ecosystem services and the general beauty of nature. Miller and Spoolman (2009:612) also refers to human capital which includes people's social interactions, their physical and mental talents and education, and manufactured capital such as infrastructure, machinery, equipment and information (Miller & Spoolman, 2009:614). Tietenberg (2006:539, 97) refers to two types of capital: natural capital such as "the soil, atmosphere, water, forests and wildlife" and human created capital (also physical capital) such as "buildings, bridges, and so forth". The environment, and biodiversity, can thus be viewed

as an asset that provides a variety of services such as raw material and energy, as well as services such as the air that we breathe, food and shelter, and amenities such as vistas, which cannot be easily substituted (Tietenberg, 2006:14). Difficulties arise when a monetary value must be attached to these goods and services that are not traded on the market, and these difficulties are compounded with regard to “non-market benefits associated with passive use or non-use value” (Tietenberg, 2006:34). However, if no appropriate value is attached to the environment, it may be assigned “a default value of zero in calculations designed to guide policy” (Tietenberg, 2006:18). This is problematic, as this could permit a great deal of environmental degradation and biodiversity loss.

Business is increasingly aware of its impact on biodiversity as evident in the Ethical Corporation’s (2018) report on The State of Sustainability 2015, which found that a great majority of the industries and mines surveyed have been persuaded of the value of sustainability which is now “a vital aspect of strategic planning”. However, respondents also reported that there are substantial opportunities for more to be done to influence the potential of sustainability and that huge challenges lay ahead, which required “considerable changes to business models and practices”. Almost 72% of the 1472 respondents of the responding companies were from Europe, North America, and the UK. Only 6.2% were from Africa and the rest from Asia, South/Central America, Australasia, and the Middle East. Of significance is that 65% of the respondents identified themselves as owners or board members which indicates their level of involvement in operations (Ethical Corporation, 2018).

Among the many findings in the State of Sustainability 2018 report are that an increasing number of CEOs (75%) are convinced of the value of sustainability - up 6% on 2015’s report - but that there is a lack of accurate impact measurement where only 45% of corporate brand respondents feel they are accurately measuring their sustainability activity impact. Nearly 70% of respondents stated that their company is integrating the UN Sustainable Development Goals (SDGs) into business strategy but only 44% of these companies are measuring their contributions to the SDGs. The top sustainability goals indicated by the respondents are climate action, decent work and economic growth and

good health and wellbeing. Driving sustainable innovation across the business was the number one opportunity in 2018 (Ethical Corporation, 2018).

In their 2014 report, the Organisation for Economic Co-operation and Development (OECD) found that most of the 1309 companies interviewed understood the importance of their corporate social responsibility and sustainability report (CSR). The research found that reporting is more focused on external stakeholders than on internal stakeholders, and that in some countries, corporate reports may lack quantified information. OECD (2014) quote PWC in their report, and note that in South Africa, where integrated reporting is mandatory for listed companies, "[v]isions are often reported, but actual strategies less so, and drivers of future growth are omitted from three out of four reports". While PWC ultimately felt that "reporting in South Africa is moving in the right direction", often reports are formulated at a high level and do not provide "real insight" (OECD, 2014:23)

OECD (2014:15) found that in the United States, the Securities and Exchange Commission (a commission that provides guidance to public companies about the disclosure requirements as they apply to climate change matters) "seems to have had limited effects, with 59% of S&P 500 companies listed on stock exchanges in the United States) reporting on climate" and noted that "[t]he quality of climate disclosure for those that do report is measured around 5 on a scale of 100".

The World Economic Forum (2010) found in their study done of 1200 CEO's in 2010 that 27% of the respondents were either "extremely" or "somewhat" concerned about biodiversity loss. Hidden within these numbers are stark regional variations. Fifty-three percent and 45% of CEOs in Latin America and Africa respectively are concerned that biodiversity loss will adversely affect their business growth prospects compared to just 11% in Central and Eastern Europe. A high proportion of the respondents (44%) are also of the opinion that their central government does not effectively protect biodiversity and ecosystems.

These three international studies have interesting and somewhat conflicting responses. Of note is that both the Ethical Corporation and OECD's respondents are convinced of the value of sustainability and biodiversity. Of the respondents from Ethical Corporation's study, 72% are from developed countries and have indicated that sustainability is a key strategic issue, and that more must be done (Ethical Corporation, 2018). The World Economic Forum's study found that only 27% of the respondents in their study are concerned with biodiversity loss but of note is that only 2% of the 27% are from developed countries (World Economic Forum, 2010).

The statistics above are taken from three international research studies of large global and/or regional industries and mines. As will emerge in later chapters, some questions posed to the respondents in this study and their responses, link with the above findings.

2.7 Summary

This chapter highlighted the value of ecosystem services and the consequential implications of biodiversity loss and ecosystem degradation due to anthropogenic interference. This chapter also reviewed the perceptions of biodiversity in business, and showed that while there is growing awareness of the importance of sustainability and biodiversity among business leaders, there is some regional diversity in attitudes, and many challenges remain, particularly with regard to measuring impacts and reporting. The next chapter will provide an overview of environmental ethics, a discipline which arose in response to an increased awareness of the ecological degradation and biodiversity loss discussed above.

CHAPTER 3: ENVIRONMENTAL ETHICS

"Down by the river, silver fish lay on its side
The doctor put us both to bed
He dosed us up and he shook his head
Only foolish people go he said
Down by the river" (*Down by the river*. Lyrics: Albert Hammond, 1972)

3.1 Introduction

Chapter 3 provides a review of the different environmental ethical theories from the classical views of Aristotle to the early 1970's when environmental ethics appeared as a new sub-discipline of philosophy. Various divergent and controversial environmental or green philosophies which have evolved in the last century will be discussed in order to provide a background against which different models of sustainability can be considered, with a view to ultimately investigating whether corporate codes of conduct make a contribution towards sustainability.

3.2 Environmental Ethics

From the following discussion, it will become evident that traditional western environmental (ethical) perspectives have, to a certain extent, an anthropocentric approach in that they "either…assign intrinsic value only to human beings…or they assign a significantly greater amount of intrinsic value to human beings than to any nonhuman things" such as a specific habitat or biological system (Brennan & Lo, 2016). This attitude has a long history, as evident in Aristotle's claim that "nature has made all things specifically for the sake of man" and therefore that the value of natural, nonhuman things is merely instrumental (Brennan & Lo, 2016). The development and growth of environmental ethics since the early 1970's as a new sub-discipline of philosophy arose as a response to a growing awareness of threats posed to the natural environment, and posed a challenge to this anthropocentric attitude by firstly, calling into question the innate species superiority of human being, and secondly, exploring whether rational arguments could be developed in favour of "assigning intrinsic value to the natural environment and its non-human contents" (Brennan & Lo 2016).

3.3 The early development of Environmental Ethics

Environmental ethics may be defined as "philosophical reflection on…the value of non-human nature" (Kibert *et al.,* 2012:73) which explores the moral values and ethical relationship between human beings and the environment (Hawken, 2007:281). It involves a consideration of the morality of how humans exist in the world or on the land. Fuggle and Rabie (2003:8) define the ethics of environmental conservation as a search to provide a basis for the relationship between human beings and their world. The objects of concern of environmental ethics may range from entire ecosystems to smaller units such as species, individual non-human beings, or even features of the landscape, for example, vistas, mountains or forests. The origins of this discipline are often traced back to Aldo Leopold's *A Sand County Almanac*, first published in 1949 (Kibert *et al.,* 2012:74).

Leopold pointed out that as societies grew and developed through the ages, ethical relations were mostly between individuals, between individuals and society, and between societies, and that this is essentially a humanistic approach (1966: 238 to 263). Nowhere was there any ethic dealing with humankind's relation to the land (Leopold, 1960:238), in other words, soil, animals, water and plants. The land relationship was purely economic: everything in the land was regarded as a resource for humankind to use (Leopold, 1966: 238, 245, 258). Leopold advocated for the adoption of a "land ethic", where land is the ecological community, and argued that the land ought to be loved and respected as an extension of ethics. According to this ethic, "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (Leopold 1966:262).

The land ethic, then, attempts to "extend our moral concern to cover the natural environment and its nonhuman contents" (Brennan & Lo, 2016). Brennan and Lo argue that Leopold's idea that the "land" as a whole ought to be the object of our moral concern laid the foundation for other to argue in favour of moral obligations toward "ecological wholes, such as species, communities, and ecosystems, and not just their individual constituents" (2016). For example, Rolston (2003:476/7), argues that we have a moral duty to protect species, and that it would be wrong to allow three endangered plant

species, with only a few dozen surviving individuals, to be grazed to extinction by thousands of feral goats. In this instance the survival of the plant species as a whole ought to be valued more than the lives of many thousands of individual goats.

However, Brennan and Lo (2016) maintain that Leopold himself did not provide a logical ethical framework or theory to support these ethical ideas. Rather, Leopold's outlook "presented a challenge and opportunity for moral theorists: could some ethical theory be devised to justify the injunction to preserve the integrity, stability, and beauty of the biosphere?" (Brennan & Lo, 2016). The rest of this chapter will provide a brief overview of some of the most prominent theories in environmental ethics that have responded to this challenge.

3.4 Reviewing Environmental Ethical Theories

According to VanDeVeer and Pierce (2003:37) an environmental ethical theory is born out of the need to guide decision making. Such theories ought to yield reasonably determinate or precise judgements on what is allowed or what is mandatory. Various contradictory and contentious environmental or green philosophies have evolved in the last century (VanDeVeer & Pierce, 2003:259-303; Shrivastava, 1997:168-171 and Miller & Spoolman, 2009:661-665). Rolston (2003:484) asked the pertinent question: "Is not the ultimate philosophical task the discovery of a whole great ethic that knows the human place under the sun?" The most prominent of these ethical theories will be briefly discussed below.

3.4.1 Anthropocentrism

McDonagh and Prothero (1997:29) define anthropocentrism as an ideology that proclaims the separateness, uniqueness, importance, and superiority of the human species. This philosophy regards human beings and the human species as a whole, as more valuable than all the other species (Washington *et al.,* 2017:35) and is the dominant ideology in most societies around the world (*Ibid*: 38). According to this view, nature is an expendable resource which exists to serve the interests of human beings, who have an inherent right to take advantage of nature without any real concern for, or obligation to preserve, its

integrity. According to McDonagh and Prothero (1997:29), anthropocentrism assumes that the preservation of nature is meaningful only as a requirement for human self-interest and that humans have no moral obligation to minimize their impact on nature. Anthropocentrism may take different forms, ranging from the ruthless developer to an anthropocentric form of preservationism.

3.4.1.1 The ruthless developer

Hattingh (2007) defines the ruthless developer, or, in Miller and Spoolman's terminology, the frontier developer (2009: S32), as someone that "conquers" land without an ecological conscience (and/or knowledge). This attitude is not necessarily limited to the past and may be encountered in the historical pioneer and the modern greenfield mining development, and in terms of space, from tropical rainforests to new township developments.

Chiras (1985) as cited by Veitch and Arkkelin (1995: 393) also refers to this attitude as the "frontier mentality" and argues that this ethic is characterised by three views:

i. The earth has an unlimited supply of resources entirely for human use and has an unlimited capacity to assimilate pollution caused by humans.
ii. Humans are apart from nature rather than a part of it. Humans can survive without natural systems and are exempt from ecological laws.
iii. Human success is best achieved through the domination and control of nature.

Typical of this attitude is an anthropocentric approach to justifying unrestricted abuse and domination, mostly driven by economical gain.

3.4.1.2 Conservationism

Miller and Spoolman (2009: S32) define conservationism as wise and scientifically managed land-use to provide the resources necessary for future generations. In conservationism, nature is conserved to enable future human development. Conservationism implies long term thinking and the minimisation or avoidance of waste and sees natural ecosystems as resources for human use that must be managed wisely. In other words, conservationism entails the preservation of nature for future human centred development while ignoring biodiversity and natural stability as well as the

aesthetic properties of nature and the intrinsic value of nonhuman life-forms (Kilbourne 1997:494). This is therefore a purely anthropocentric approach, as the conservation of the environment is directed towards ensuring long term satisfaction of human interests.

3.4.1.3. Preservationism

Muir, as the father of the term preservationism, advocates for the protection of large areas of landscape from change and human interference (Miller & Spoolman, 2009: S32). Contrary to conservationism, where nature is preserved for future human development, preservationism is the protection of nature *from* future human development (Kilbourne, 1997:494). Two forms of preservationism may be distinguished. Weak, anthropocentric preservation is implied if the motivation for preservation is to provide human spiritual resuscitation. Nature may be protected or preserved so that humans may use it in future, and preservationism is therefore meaningful only as a condition of human self-interest (Shrivastava, 1997:29). On the other hand, if the motivation for the preservation of the environment is its inherent value, regardless of its value for human use, then strong preservation is implied (Milfont & Duckitt, 2010:8, 89; Milfont, 2007:188). According to this view, nature must exist and survive without human intervention, and does not exist for the sake of humans only. Strong preservationism is therefore also a form of non-anthropocentrism, an overview of which will be provided in the next section.

3.4.2 Non-anthropocentrism

Anthropocentrism sees in nature instrumental value purely for human and organisational purposes and legitimates the exploitation of natural resources. The contrary view reflects the idea that the natural environment has inherent value rather than instrumental value and places nature at the centre of management or organisational concerns. Nature's inherent or intrinsic value is the distinctive point of non-anthropocentric ethics.

3.4.2.1 Extentionism

Various philosophers have argued that the category of beings with moral standing should be broadened to include animals (Cochrane, 2016). Singer (2003:136) references Bentham (1789) who argues that "the question is not, Can they *reason*? nor Can they *talk?* but, Can they *suffer*?" Singer, who takes a utilitarian animal welfarist position, is of

the opinion that if a living being suffers there is no moral reason for refusing to take that that suffering into account, and that it should be regarded as equal to the suffering of any other being.

Singer's utilitarian approach assumes that only the outcomes of an act matters in determining the morality of that act, as opposed to Regan's deontological animal rights position that assumes that one's duties are not only determined by weighing up the outcomes of various options. Regan (2003:143), who regards himself as an advocate of animal rights, argues that the fundamental wrong is the system that allows us to see animals as resources. Once man views animals as resources to benefit him, he will not worry about their pain, suffering or death but only about the benefit he can derive from that animal. Regan (2003:145) points out that man must recognise that he has direct duties to animals, just as we have some duties directly to each other, for example, we have a direct duty to be kind to animals and a direct duty not to be cruel to them.

Ethical extensionism is thus a broadening of the grouping of things to which humans may owe an ethical duty. Extentionism bases the intrinsic value of animals on, *inter alia*, their capacity for symbolic communication and their ability to form shared relationships.

3.4.2.2 Biocentrism

VanDeVeer and Pierce (2003:650) define biocentrism as the view that any living thing has moral status. This view may allow that different living things have different magnitudes of intrinsic value (biocentric inegalitarism) or it may hold that all living things have the same magnitude of intrinsic value (biocentric egalitarism). According to Taylor, biocentrism has four main components:

i. Humans are thought of as members of the earth's community of life. The terms of this membership are applicable to nonhuman members as well.
ii. The earth's ecosystems are seen as a complex web of interconnected elements which are a dynamic but relatively stable structure, a self-regulating, energy-recycling mechanism, preserving the equilibrium of the whole.

iii. Each individual organism is seen as a teleological centre of life pursuing its own good in its own way and
iv. The claim that humans by their very nature are superior to other species is a groundless claim and must be rejected as biased (Taylor, 2003:207).

Biocentrists believe that all species have an intrinsic value and that humans are not superior to other living things in a moral or ethical sense. Humans claim superiority to other living organisms, yet we must ask: superior on what grounds? Clearly this claim to fame is from a human standpoint. Humans are just another specie, a mammal, one of many on earth, and from this point of view, biocentrists claim that environmental ethics is a matter of biology rather than psychology. Biocentric ethics calls for appropriate respect to be given to all living things, including, for example, wildlife, farm animals, butterflies, and trees (Rolston, 2003:521). Biocentrism is therefore an example of a deontological ethical theory which calls for the reconsidering of the connection between humans and nature and states that nature does not simply exist to be used or destroyed by humans.

3.4.2.3 Ecocentrism

Ecocentrism is often equated with biocentrism, because of the many similarities between these theories. Leopold (1966:262) is often recognised as the father of ecocentrism and sums up its foundational principle, as previously noted, as: “a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise”. According to Callicot (2003: 228-234), this involves “respecting and protecting species, particular places, wild predation, evolutionary history, ecological energy circuits, wilderness areas, and land health”. This ideology became the basis of ecocentrism, which argues that ecological interests are central in determining right and wrong.

Ecocentrism, as a deontological approach, holds that “a shift in values” is required in order that we may consider the non-human world as of equal value to humans (Callicot, 2003:236). In other words, “the ‘things natural, wild and free’ like soil, water, atmosphere and other species” are regarded to be as valuable as “‘things unnatural, tame, and

confined' like the human community and culture" (Washington *et al.,* 2017:38). Washington *et al.* hold that ecocentrism does not argue that all living things have equal value, neither is it an anti-human argument or against social integrity. The intrinsic value of natural systems and the non-monetary value nature possesses independently of human valuers, strongly relates to an ecocentric concept. The healthy state of a self-regulating ecological system has *per se* a higher intrinsic value than one that is in imbalance because of anthropocentric activities. This perspective does not deny that myriad important homocentric problems exist.

3.4.2.4 Deep Ecology

Deep ecology, with eco-feminism, is classified by Shrivastava (1997:170) as radical environmentalism and provides a strong theoretical criticism and dismissal of anthropocentrism. The term deep ecology originates from the Norwegian philosopher Arne Naess. It implies that people should care about the earth, not just for our human needs, but for the earth's sake. Humankind must live in harmony with nature which has an intrinsic worth and should not dominate it and see it only as a resource.

The earth's supply is limited, as opposed to the consumerist belief in ample resource reserves. Man's needs must be redefined, consumerism must be limited and recycling upscaled. Naess sees the prospering of both human and non-human life on earth as an inherent value where life, in a broad sense, includes rivers, landscapes, and ecosystems. He argues that humans, instead of identifying with our egos or only our direct families, ought to learn to identify with trees and animals and plants, in other words, with the whole ecosphere. Humans only have a right to impact on the richness and diversity of the ecosphere to satisfy their vital needs. The satisfying of these vital needs, and the continuous existence of human life on earth, is compatible, according to this view, with a significant decrease in the human population, and this is in fact required to ensure the flourishing of non-human life (Shrivastava, 1997:170; Miller & Spoolman, 2003:651 and Devall & Sessions, 2003:263-268).

3.4.2.5 Eco-feminism

Eco-feminism is a distinctly feminist ecological position which states that the domination of women and the devaluation of nature are connected, and as such sees the freedom of women and of nature as one program. The same structure applies to both the oppression of women and the human domination of nature (Shrivastava, 1997:170). Eco-feminism ascribes environmental problems to androcentrism. Women receive the same abuse and uncertain position in life as nature. Men dominate and deny both their rights for their own benefit. Eco-feminism claims that natural female traits are the key to a solution to environmental problems. (VandeVeer & Pierce, 2003:651).

3.4.2.6 Social Ecology

As far back as 1952, Murray Bookchin formulated his anarchistic theory that the domination of nature stems from a capitalist economy and argued that an ecological crisis lay on the horizon. He also claimed that the economic and technological boom in 1952 would have harmful environmental consequences. Bookchin blamed the ecological crisis on authoritarian social structures and called for the establishment of small-scale egalitarian societies that recognised the fact that human wellbeing is inextricably connected to the wellbeing of the natural world. (Mongillo & Booth, 2001:21). Mongillo and Booth (2001:23) quote Bookchin (1990) as saying that: “Nearly all the non-human life forms that exist today are to some degree in human custody and whether they are preserved in their wild lifeways depends largely on human attitudes and behaviour”.

VanDeVeer and Pierce (2003:654) describe social ecology as a somewhat radical, liberal to leftish, democratic, egalitarian view that advocates the importance of the environment in terms of autonomy and reason. It has an enlightened approach and opposes perceived mystical, intuitionist and detached elements it discerns in Deep Ecology and Eco-feminism. Social ecology links social domination and domination of nature and argues that there is a relationship between social and ecological problems (VanDeVeer & Pierce, 2003:654). It maintains that a community should be like an ecosystem. Social problems, however, should be addressed before ecological problems. Cochrane (2016) concurs with VanDeVeer and Pierce (2003:654) and adds that “modern societies have fostered a

hierarchical relationship between humans and the natural world". This relationship stems from the ideology of the free market system which has reduced both humans and the natural world to mere commodities. Centralised governments are just another agent for domination and social ecologists thus call for smaller local communities based on participation through democracy, and freedom through non domination.

3.4.2.7 Bioregionalism

The term bioregionalism was coined by Peter Berg in the early 70's (Alexander, 1990:161), and refers to a set of political, cultural, and ecological views based on naturally defined areas called bioregions or ecoregions. Zuckerman (1989:51) argues that this idea is not pure natural science but also a cultural idea. It is a way for people to look at the place where they live in terms of the natural environment, which was formed "out of a grass-roots interest in how to bring about social change that would lead people to protect and restore the environment on a local level" (1989: 52). The unique, local characteristics of any given region should be taken into consideration when attaching a definition to a specific bioregion.

Berg argues that human activity, including environmental and social policies should be based on bioregions which are defined through physical and environmental features, including natural boundaries such as watershed boundaries as well as soil and terrain features, rather than economic or political boundaries (Zuckerman,1989:51-53). Berg believed that the two most important pro-active directions for ecological action are: 1) Ecosystem restoration of native (indigenous) plants, animals and habitats, the recreation of forests and rivers, and the removal of dams and 2) urban sustainability, and the greening of cities to make them harmonious with natural systems of their bioregions (Mongillo and Booth 2001:19).

3.5 The challenge of Environmental Ethics

As noted above, environmental ethics is a philosophical approach to the thought-provoking question of how one should live in and from the environment. Rolston (2003:518) argues that humankind and nature have entwined destinies, just as the mind

is inseparable from the body. This implies that ethics needs to be extended to the environment. Rolston (2003:522) states that environmental ethics is the most unselfish of ethics as it takes responsibility for all other living organisms.

From the ethical approaches discussed above it is clear that humans are not only part of, but *in* the natural community rather than *outside* and managers of it. Many of the theories above point out that humans suffer when the health of a natural ecosystem is impaired. An ethical approach should place limits on human development activities such as uncontrolled resource use and exploitation of the natural environment that will ultimately adversely affect the natural community. It is also clear that there are numerous conflicts of interest in the various ethical approaches discussed above and, that some of them are extremely challenging to resolve.

From the above it is also evident that environmentalism, as a broad movement, is often mired in conflict between human-centred and nature-centred positions. The degradation of our environment that is prevalent in our current society suggests that humans do perceive themselves as separate and apart from the environment. We seem to believe that *we* would not suffer ill effects by damaging *it*. Foreseen and unforeseen historical unsustainable actions have caused various levels of environmental degradation and the collapse and loss of ecosystems. This has initiated the concern for the preservation and protection of the environment with its inter-connected systems (Du Pisani, 2006:86), while the drive towards sustainable development that takes the environment into account, has increased (Glasson *et al.,* 2005:2).

Wilson (2003:40) argues that the question of environmental debate stems from the conflict between short- and long-term values. It is easy to select short term values, and in theory it is also easy to select long term values for the distant future of the planet. However, “to combine the two visions to create a universal environmental ethic is, on the other hand, very difficult” (Wilson, 2003:40). This could be attributed to man’s aspiration to fulfil his immediate needs: food for today, or a second or third vehicle, with the concomitant destruction of forests, wetlands and grassland and other resources.

To address the disparities between the various ethical approaches, I would like to argue that environmental ethics, which concerns the formulation of our moral obligations towards the environment, should primarily be formulated from a scientific understanding of the natural environment. Traditional knowledge of indigenous people and others must be acknowledged and incorporated. Political forces or actions which affect the environment must be considered in the formulation of a “new” environmental ethics. Lastly the consumers of environmental resources should be informed of their impact and be consulted in the drafting of such an ethical approach. The product must be the most acceptable moral outlook that is strong, specific, inclusive and prejudice free and can be achieved by being integrated into an organisation’s environmental code of conduct.

Pope Francis (2015:118-119) in his encyclical letter of 24 May 2015 titled “Care for our Common Home” says that “protecting the planet is a moral and ethical ‘imperative’ for believers and non-believers alike and it should supersede political and economic interests”. He further stated that time is running out to save a planet "beginning to look more and more like an immense pile of filth" which could lead to "an unprecedented destruction of ecosystems" this century.

However, the moral dilemma is about both the nature and extent of man’s impact on his environment and resources, and subsequent fears of global environmental consequences. With the growing knowledge of man’s environmental dilemma becoming available, a new, different, innovative, and generally acknowledged environmental ethic must somehow be formulated. This new environmental ethic, born out of the anthropogenic induced failure of our environment will require, and force government and industry, to balance environmental impacts by introducing and applying environmental laws and environmental management practices. However, the question remains how credible the environmentally conscious business is. Has it scored some “green points” for the business only because it looks good and attracts visionary talent or, because it is environmentally the right thing to do? Later in this thesis, I will attempt to investigate this question further.

3.6 Summary

This chapter has discussed the growth and development of environmental awareness and the associated environmental ethical schools of thought. Various philosophical approaches were discussed as well as the challenges environmental ethics faces in the 21st century. As man became aware of ecological degradation and biodiversity loss, and its impact on humankind, it prompted the awakening of environmental ethics. Sustainable development followed much later as a "management tool" for man's impact on the environment. This concept will be investigated in the following chapter.

CHAPTER 4: OVERVIEW OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT

"The mighty willows weep said he
Because they're dying gradually
From the waste from the factories
Down by the river
The mighty willows weep, said he
down by the river" *(Down by the river:* Lyrics by Albert Hammond, 1972)

4.1 Introduction

While the previous chapter informed the reader about the growth and development of environmental awareness and care and the ensuing environmental philosophical schools of thought, this chapter will highlight the concept of sustainable development as a component and outcome of environmental ethics. Sustainable development has been variously defined in the literature. In this chapter definitions applicable to the current research study will be explored.

The importance of sustainability is underlined by The Millennium Ecosystem Assessment carried out by the World Resources Institute (WRI) in 2005, which indicated that "human actions are depleting Earth's natural capital". Non-sustainable anthropogenic actions put so much strain on the environment that "the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted". However, the assessment also showed that, if action is taken, the degradation of ecosystem services could be reversed over the next 50 years, but this will necessitate substantial changes in policy and practice, which are "not currently underway" (Millennium Ecosystem Assessment, 2005). One of the reasons for this could be the ongoing pursuit of solely economic, as opposed to sustainable development.

4.2 Sustainable Development vs. Economic Development

Economic development refers to sustained growth in the economic standard of living by expanding per capita income, making more beneficial and effective use of physical capital, and increasing human capital (Fuggle & Rabie, 2003:27; Hunter, 1995:237-239). Hawken (2007:289) argues that the concept of unrestrained economic development is

controversial because of past economic imperialism, the harmful social and environmental impacts of various development projects, and the increasing gulf between the rich and poor, and that the concept of sustainable development results as an answer to Western-generated development theories.

4.3 The evolution of the concept of Sustainable Development

The concept of “sustainable development” has often been criticised, largely because it means different things to different people (Ngobese and Cock 1995:260). It is therefore open to multiple interpretations and may be vulnerable to political manipulation. Focus on the concept of sustainable development was stimulated by various publications, for example, Aldo Leopold’s Sand County Almanac (1949), Rachel Carson's Silent Spring (1962), Garret Hardin's Tragedy of the Commons (1968), the Blueprint for Survival by The Ecologist (1972) and the Club of Rome's Limits to Growth report (1972). Major environmental incidents such as the Bhopal chemical gas leak in 1984 in India (McDonagh & Prothero, 1997:26), the Rhine River pollution incident in Switzerland and Germany in 1986, the Chernobyl nuclear reactor melt down in 1986 in Russia and the Exxon Valdez Oil spill in 1989 in Alaska (McDonagh & Prothero, 1997:170; Klein, 2014:337-339) also led to growing awareness of environmental deterioration. In response to this, the idea of sustainable development first entered the debate at the United Nations Conference on the Human Environment in 1972 (Fuggle & Rabie, 2003:178). Although the term sustainable development was not directly referenced, those gathered at this event supported the idea that development and the environment could be managed in a way that was mutually beneficial to both, and did not need to be approached as separate issues (McDonagh & Prothero, 1997:89).

The term sustainable development became popular 15 years later in 1987 following the report by the World Commission on Environment and Development, titled Our Common Future. The commission was chaired by Gro Harlem Bruntland, and defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Hunter, 1995: 238; McDonagh & Prothero, 1997:89).

Upon analysing this definition, five key ideas may be noted:

i. The concept of sustainable development implies that a society's use of natural resources and waste production must be within the limits that the environment can meet – in other words, that we are not consuming resources to the point that the natural system cannot maintain ecosystem services (Hawken, 2007:211).

ii. The idea of limits on the capacity of the environment to meet present and specifically future needs in the same manner. The definition acknowledges that the earth's resources are finite, and that environmental capacity is limited, even more so today, with regard to providing goods (i.e. natural grown timber, rare earth minerals) and services such as clean air and water, and recycling pollution.

iii. The importance of time frames, where short-term development could have a destructive effect on the environment in the long term. Environmental sustainability suggests adopting a much longer-term perspective when focusing on living within ecological constraints. Environmental sustainability should force one to think and plan in terms of generations.

iv. The concept of needs, to which overriding priority is given. Initial interpretation of sustainable development focused particularly on the needs of the poor, rather than taking a holistic approach to address the needs of people and the natural environment in general.

v. Development suggests prosperity. This implies growth, costs and profits which suggests that "sustainable development" could mean different things. To the developer it means his income is sustained through his investment. For others it could mean permanent employment and for someone else the preservation of a rare plant or wetland protected by the development.

The outcome of the Brundtland Report was to investigate the concern that had been raised by environmentalists and sociologists that human activity is having "severe and negative impacts on the planet, and that patterns of growth and development would be unsustainable if they continued unchecked" (McDonagh & Prothero 1997:113). During the United Nations Conference on Environment and Development held in Rio in 1992, also known as Earth Summit 1, world leaders took this concern further and recognised

sustainable development as a major challenge. This summit, which was attended by over 100 Heads of State and representatives from 178 national governments, focused on developing strategies for achieving a more sustainable form of development (United Nations Division for Sustainable Development, 1992; McDonagh & Prothero, 1997:114-116; Klein 2014:55,85). The World Summit on Sustainable Development, held in Johannesburg in 2002 to assess progress made since Rio, and often referred to as Earth Summit 2, was attended by 191 national governments and a broad range of interest groups. This summit considered "the issue of environmental degradation caused by human actions" in the pursuit of "speedy economic growth", the threat to "life-sustaining natural processes" and the depletion of "the resources that future generations will need for their progress and prosperity" (Doran 2002:17). The Johannesburg Summit recognized that "essential requirements for sustainable development are poverty eradication, changing consumption and production patterns, and protecting and managing the natural resource base for economic and social development" (Doran, 2002:19).

4.4 Interpretations of the term "Sustainable Development"

As noted above, the Brundtland Report coined the term sustainable development and undertook to reconcile the environmental and development interests of developed and developing countries. This section will explore the various interpretations of sustainable development that have subsequently been developed in various disciplines, while noting that each interpretation is a tailored for a specific purpose and that none can be regarded as ideologically neutral (Hattingh 2002:5).

Falk *et al*. (2009:139) define sustainability from an ecological perspective as "when natural species diversity is maintained, species are abundantly distributed throughout their recent historic native range, community associations are maintained, natural processes occur at reference intervals and conditions and human disturbance is minimized". This appears to be an ecocentric interpretation of sustainability. Tietenberg (2006:99-100), on the other hand, defines sustainable development as "the notion that earlier generations should be free to pursue their own wellbeing as long as in so doing

they do not diminish the welfare of future generations". This definition considers sustainable development from an environmental economic perspective, and accords with Fuggle and Rabie's (2003:31) definition of sustainability as "the management of man-made and environmental capital to maintain the capability of satisfying the needs and aspirations of both present and future generations". Tietenberg (2006:100) then states that this idea "gives rise to three alternative definitions of sustainable allocations". Weak sustainability implies that resource use by current generations should not prevent future generations from achieving at least the same level of wellbeing as the latter, in other words, that the value of the capital stock (natural as well as physical) should not decline. Strong sustainability, on the other hand, "implies that the value of the remaining stock of natural capital should not decrease" and emphasizes the preservation of natural rather than total capital, based on the assumption that "natural and physical capital offer limited substitution possibilities". Finally, environmental sustainability implies that the physical flow of individual resources should be maintained, so that, in the case of a wetland, for example, "specific ecological functions" are preserved and not merely its value (*Ibid*., 100). Feris (2010:82), arguing from a legal perspective, notes that "the exact meaning and scope of sustainable development remains subject to debate", but highlights principles of intergenerational equity (which requires the preservation of natural resources for future generations), sustainable use (which requires that natural resources be exploited in a balanced manner), intra-generational equity (which requires the exploitation of natural resources in an equitable manner; and integration (which implies that environmental considerations ought to be incorporated into economic and other development strategies) (Feris 2010:80).

By placing emphasis on intergenerational and intragenerational equity, it can be reasoned that the preservation of natural resources by current generations for future generations and by current generations for the current generations is in line with the Bruntland Report which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Hunter, 1995: 238). Hattingh (2002:9) notes that the Bruntlandt definition has a substantive anthropocentric approach, and this is evident in almost all the interpretations

discussed above, with the exception of the ecological definition offered by Falk *et al*. With this background in mind, I will now turn to consider how sustainability is typically interpreted in the corporate context.

4.4.1 Corporate Sustainability

Sustainability is gaining increasing momentum within the business world, as previously noted. But, most likely, if you ask a company for its definition of sustainability the response would probably be a reference to the Brundtland Report. Others will refer to the three pillars of sustainability: the economic, social, and environmental impacts to be considered when making decisions. However, Barkemeyer *et al.* (2014) argue that there has been a shift away from the original Brundtland definition of sustainable development in business codes and guidelines. They found it particularly noticeable regarding two aspects. First, "the limitations imposed by sustainable development have been downplayed in favour of a managerialist emphasis that is in line with the win–win paradigm in corporate sustainability". Secondly, there is less focus on intergenerational equity and poverty alleviation which "creates the illusion that business can address sustainability without also giving attention to poverty" (2014: 29).

The International Chamber of Commerce (ICC), often regarded as the voice of world business, defines sustainable development as "… a process whereby companies seek to manage their financial, societal (including governance) and environmental risks, obligations and opportunities". This triple bottom line approach (taking into account financial, social and environmental impacts) also implies that business must determine the impact they have on the environment in which they operate and report on this, both with respect to positive and negative impacts. The term "sustainability/sustainable development" may, according to this view, be viewed as an umbrella term, which incorporates other terms such as "Corporate Social Responsibility (CSR)", "Environmental, Social, Governance (ESG)" or "triple bottom" line (International Chamber of Commerce, 2015:4).

Within the South African context, King (2009:15-17) takes a similar approach and maintains that the triple bottom line or Sustainability Report is applicable to all government and civil society organisations. From the report, a stakeholder should be able to determine the company's commitment, strategy and management approach. Stakeholders should also learn from the report how companies intend to increase the positive aspects and eliminate or mitigate the negative aspects of their operations in the following year. With regard to environmental issues, stakeholders should be informed as to how a company has impacted on the ecosystems of the community or communities in which it operates, including land, air and water, accepting that people, planet and profit have become inextricably intertwined.

Corporate sustainability in general, then, involves the recognition that business objectives should range beyond profit to include concern for the natural environment and the communities in which they operate. Visser and Sunter (2002:15) argue that sustainability is a new way of perceiving business, its objective, its practices, and its impacts. For those who are ill prepared, sustainability will become a significant financial burden and for those who respond quickly and positively, new markets will open.

Various authors (Cook 1995:281, McDonagh & Prothero 1997:164 and Freeman 2003:319) have found, however, that traditionally, within corporate contexts, considerations with respect to cultural, social and environmental impacts have been perceived as being in conflict with financial goals, because alternatives typically require investments in infrastructure with no, or little, return on investment. This requires budget for social investment in the form of community upliftment projects and environmental investment based on mitigation and/or rehabilitation costs. However, although sustainability requires a longer timeline with respect to return on investment, once initial investments on environmental mitigation measures are made, they can lead to benefits in the long term. In the same way, investments in social practices may initially cost businesses money but may also lead to an improved reputation, with knock on benefits for recruitment, branding and public relations, which may increase profitability.

However, my experience of greenfield[3] developments in the mining industry is that modern corporate business still has a frontier mentality, with the intent to conquer a perceived abundance of something, which in today's terms, is resources. Leopold (1970:238) maintains that "there is no ethic dealing with man's relation to land and to the animals and plants which grow upon it" and this is still evident today with the devastation of virgin tropical forests to plant coconut palms or the drainage of a wetland for coalmine operations. The land is often regarded solely as the property of the organisation and land-relations are strictly economic, involving certain benefits but not responsibilities. Chiras, as cited by Veitch and Arkkelin (1995:393) also refers to "biological imperialism" where developers need to expand and subdue to sustain growth and maintain their position in the marketplace. This is in line with the approach of the ruthless developer but appears to be incompatible with the enlightened approach to corporate sustainability outlined above.

4.4.2 The Economic, Social and Environmental Dimensions of Sustainability

As is clear from the discussion above, it is increasingly maintained that growth and progress should be based on the framework of sustainable development. This requires that any developmental activity should integrate economic, social, and environmental aspects in its planning, operations, and eventual ceasing of operations (King, 2009:15).

The economic aspect of sustainable development can be viewed as:

> business practices that contribute to economic growth in the direction of sustainable development, to encourage efficient and cost-effective policies and approaches that promote entrepreneurship and empower and enable the establishment and start-up of businesses, to ultimately contribute to the concept of decoupling economic activity from adverse environmental impacts, including new approaches to incorporate externalities in economic terms (ICC 2015:9).

[3] Greenfield development is a well-established term within the mining fraternity and refers to a new mine or industrial development in an area where no such development occurred previously. This is in contrast with a brownfields project which is developments on abandoned industrial or mining sites. (Miller & Spoolman, 2009: 583,366)

Development is required to be profitable and productive, as well as ensuring a sustainable environment. This requires that there must be financial gain from the mining or industrial process, and that there must also be a need for the specific mineral, resource, or product. The ICC economic approach does not, however, focus much on environmental goods and services.

The social aspect of sustainable development requires that, the surrounding community and the value chain must benefit from the developmental activities for an extensive period (King, 2009:17) and the community's quality of life should not be negatively impacted. The challenge is the harmful environmental consequences which will continue for years after many developmental activities ceased. Negative impacts on the environment should be prevented and/or mitigated and rehabilitated while keeping the concept of sustainability in mind.

The environmental aspect of the sustainable development can be described as:

> recognition and assessment of environmental impacts associated with the business activities. Implementing an effective environmental management system to minimize actual and potential adverse environmental impacts and to maximize resource efficiency of all natural resources, particularly water, energy and soil (ICC 2015:9).

This includes that the organisation adheres to the legislative requirements within which the organisation is licenced to operate. This includes limits on energy consumption, the use of water and natural resources, carbon emission levels, sustainable waste processes and effective land rehabilitation.

Cook (1995:281) maintains that political capacity is the fourth dimension of sustainable development. Development should not impact and decrease the quality of current or future generations' lives, nor the biodiversity of the region and communal resources such as air and water quality and vistas. Environmental care is paramount and natural resources should be used ingeniously to gain maximum value and to reduce pollution and waste. Sustainable development should incorporate an accounting system that includes green accounting to account for ecological services and goods. The goal of such an

approach is, according to Cook, a more balanced development of environmental, social, political, and economic resources.

4.4.3 Definition of sustainability for the purpose of this study

Kibert *et al*. (2012:75) suggests that one way to define sustainability is, as a subset of, or a specific approach within environmental ethics. Such an approach would emphasize environmental justice and human health issues as well as social and economic issues. This implies that the more anthropocentric approaches in environmental ethics could also be understood as "sustainability" ethics. Kibert *et al*. (2012:76) cites the work of Ben Minteer as an example. Minteer's (2006) sustainability approach "argues that environmental ethics should be identified as a kind of "civic philosophy" that emphasizes "long-term human interests, such as a concern with the well-being of future generations"" and "rejects non-anthropocentric (ecocentric or biocentric) ethics, which find intrinsic value in non-human nature apart from its usefulness to or appreciation by humans". Minteer therefore "makes social, economic, and political concerns central to environmental ethics". However, I would argue this is a weak notion of sustainability and environmental ethics as neither the environment nor its services and goods are recognized (Kibert *et al.,* 2012:76).

My consideration of the various interpretations of sustainability above left me with the question if sustainable development is primarily designed for people and profit, with the natural environment as an external beneficiary. I would argue that the definitions discussed above are outdated and have an anthropocentric nuance or "modern frontier" mentality. Hattingh (2002:9) suggests that this stems from the functional anthropocentrism of the Brundtland report.

It is also possible that the loose interpretations of sustainable development may in turn impact on the clarity of environmental policies. The vagueness and complexity of the term sustainable development could allow institutions to treat it as a convenience or lip service (Hopwood *et al.* 2005:38). There is no common route to sustainable development and the driving forces behind sustainable development remain non-governmental organisations, international agencies, local people or specialist consultants and academics. It is clear,

with South Africa's world class environmental legislation, that the Government do have the public intention to pursue sustainable development. However, the application of the law remains questionable.

I believe that the definition of sustainable development should be refined by economists, biologists, ecologists and developers as well as traditional knowledge, and that a revised and clear definition should highlight that the world and its resources are a system that connects space, elements and time. Smuts (1987: 318-320) coined the word "holism" to theorise that parts of a whole are intimately interconnected, to the extent that they cannot exist independently of the whole and cannot be understood without reference to the whole. The whole is thus regarded as greater than the sum of its parts. Gray (1997:257) echoes this view with respect to the environment with his systems theory, which states that you cannot look at one environmental aspect or system without considering the others.

When the world is thus viewed as a holistic system (including space, elements and time), it will be understood that air pollution from Mpumalanga Highveld airshed affects air quality in the Lowveld and Mozambique via air currents. Pesticides and herbicides sprayed inland could harm rivers and wetlands downstream and marine life along the coast of South Africa. The removal of one part from an ecosystem can cause the ecosystem to collapse. If a specific grazer is permanently removed from a patch of specific grass, the grass might take over a neighbouring ecosystem and smother that system. At the same time the predator of the grazer will face starvation. Development can, and does, impact on the commonage of air, water, biodiversity and vistas. When the world is viewed holistically, people will realize that the decisions made now about how to utilise the land will continue to affect ecosystems and services far into the future. Overgrazing, overfishing, and deforestation all have long term associated environmental impacts which could last for generations. The environmental policies endorsed today will have an impact on natural resources, ecological systems and biodiversity when the current decision makers are no longer around.

I argue that any reliable interpretation of sustainability needs to take the above into account. Dermody and Hammer-Lloyd (1997: 368) hold that this holistic view implies certain responsibilities that apply to all strategic and operational functions, and this would involve:

i. product stewardship such as developing products with minimal environmental impact from cradle to grave
ii. holistic development based on the principles of declared ethical corporate environmental responsibility
iii. matching environmental performance with stakeholder needs and
iv. adopting a proactive approach to greener product development (Dermody & Hammer-Lloyd 1997: 368).

Achieving sustainability and environmental excellence thus requires the development of an explicitly green business philosophy.

Based on the above review of the various interpretations of sustainable development, it can be concluded that, for the purpose of this study, sustainability entails a well-integrated justifiable balance between economic, environmental, and social health of a community and/or region, which takes a holistic view of the world's environment.

4.5 Summary

The evolution of the concept of sustainable development was discussed in this chapter followed by a presentation of the various definitions and interpretations of sustainable development. The definition of sustainable development that will be used for this research study to explore if environmental codes of conduct of organisations make an inherent contribution to sustainable development, was also formulated. From the reviewed literature, it is evident that sustainability and sustainable development are used as synonyms. This will also apply for this study. The following chapter will discuss corporate social responsibility and its contribution to sustainability.

CHAPTER 5: CONCEPTS OF CORPORATE SOCIAL RESPONSIBILITY

"And in time the riverbanks will die
The reeds will wilt and the ducks won't fly
There'll be a tear in the otter's eye down by the river
The banks will soon be black and dead
And where the otter raised his head
Will be a clean white skull instead
Down by the river" (*Down by the river.* Lyrics: Albert Hammond, 1972)

5.1 Introduction

While the previous chapter reviewed the evolution of the concept of sustainability, this chapter sets out to link sustainability with Corporate Social Responsibility (CSR). CSR is regarded as the proposed vehicle to corporate sustainability. This chapter will inform the reader of the motivation of an organisation for its consumerist approach. Friedman's view, that the only social responsibility corporations have is to maximise profits for shareholders, will be investigated as well as the interpretations of CSR, and whether corporate responsibility is typically proportionally divided between the social and natural environment. This chapter also concentrates on the implementation of Corporate Social Responsibility (CSR) in South Africa as a requirement for sustainable business and the annual sustainability report to shareholders and stakeholders (King 2009:15,16; Mazurkiewisz, 2004:2; Dummett, 2008:48). This chapter will therefore elaborate on the perceptions, applications, and expectations of the concept of Corporate Social Responsibility, which, according to Stoyanov (2017:1) has undergone ongoing development since emerging in the 1950s, and finally explore what the legal applications of CSR in South Africa require.

5.2 The scope of Corporate Social Responsibility

According to Thompson (2017:1) Corporate Social Responsibility refers to "business contribution to sustainable development". Lehmann (2009:271) argues that CSR is an acknowledgment by firms that they are responsible for the social, economic and environmental impacts of the way that they conduct their business and that it has become an essential condition for big business. The United Nations Industrial Development

Organisation (UNIDO) (2019:1) defines CSR as “a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders” and “is largely understood as being the way through which a company achieves a balance of economic, environmental, and social imperatives”. Cheruiyot and Onsando (2016:92) proclaim that CSR “remains an embryonic, contestable and fluid concept” and “the meaning and value of CSR may differ in various contexts depending on local factors such as culture, environmental conditions and legal framework” Cheruiyot & Onsando (2016:92). Mazurkiewicz (2004:4) points out that there is no single commonly accepted definition of CSR. There are, however, different perceptions of the concept among the private sector, government and civil society. CSR may thus cover:

i. a business operating responsibly in relation to internal stakeholders (shareholders, employees, customers, and suppliers),
ii. the role of the business in relation to the local and national government (state institutions and standards and compliance to relevant legislation) and
iii. business performing as an accountable member of the society in which it operates, including its regional and global impact or influence.

Carroll (1979) as cited by Stoyanov (2017: 8,9) argues that the public responsibility of business includes the economic, legal, ethical and discretion expectations of society towards the organisation. The economic expectations imply that the business has the responsibility to deliver goods and services for the society in which it operates with the purpose of making a profit. The legal expectations relate to the organization observing the laws of the society while producing and making a profit. The ethical responsibility the business has defines the types of behaviour and ethical norms society expects the business to follow. The discretionary responsibilities are the free will roles the business takes over in order to bring prosperity to the society.

However, in both Stoyanov’s (2017) and Dummett’s (2008) discussions of the development of CSR it is apparent, from the definitions of CSR from the 1950’s to the early 1980’s presented, that the environment per se, is often excluded. However, one

could perhaps argue that concern for the environment could have been implied by the business through its concern towards society.

5.3 Views on Corporate Social Responsibility

The foundation of capitalism, according to Smit & Cronje (2002: 452), is based on the ideas of Adam Smith (1723 – 1790), who believed that public interest is, in the long-term, best served when individuals and organisations pursue their own self-interest. Smith argued that the more profit the entrepreneur makes, the more society will benefit from that, as more people will be employed, and societal needs for good and services will be met. Government should therefore interfere with business practices as little as possible.

The economist and Nobel Prize winner, Milton Friedman elaborated on the ideas of Smith and said that:

> There is one and only one social responsibility of business — to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud (Friedman,1970).

Thus, when an organisation makes a profit it is being “socially responsible” as it employs people from within the community and pays salaries and dividends (Friedman,1970). According to Friedman, private organisations should not take on the (social) responsibilities belonging to government. Thurow (1996) as cited by Dummett (2008:18) claims that western capitalism “has been the driving force behind unparalleled economic and social progress”. Although economic growth itself is responsible for much of the current environmental degradation, which already risks the possibility of meeting even present-day needs, the “classical model of social responsibility denies that business has any direct environmental responsibility” (DesJardins, 1998:827).

Friedman (1970) argued that business impacts such as the reduction of biodiversity are unintended, secondary results and not an intended result of activities of an organization. There is little to be gained in wagging a finger at “culprits”. Their impact on biodiversity is a “spill-over effect” or collateral damage resulting from activities directed towards goals

of increasing profit. Friedman (1970) reasons that an organisation which exploits a "common resource" such as water or soil to realise its goal, is not necessarily blind to man's needs. It is pursuing its immediate self-interests within "the rules of the game laid down by society's inadequate institutions" (Friedman 1970). What both Smith and Friedman say is that by becoming richer I benefit everybody, not just myself (Harari, 2014:348/9).

However, modern business should now know better as CEOs begin to understand that disregarding environmental and social issues can have negative impacts on their business. For example, companies that pollute in their local communities' risk attracting negative publicity. Not supporting local small and medium black owned enterprises could end up in legal proceedings against the company. Also, shareholders will tend to avoid investing in companies that act in a socially irresponsible way and environmentally conscious consumers prefer products and services that are socially responsible. Friedman (1970) failed to recognize that acting ethically can be a valuable marketing proposition. However, this argument suggests that a business acts ought to act ethically because it is good for business and not because of any inherent moral responsibility to do so, and therefore still appeals to self-interest.

DesJardins (1998:827) points out that Friedman's "classical model of social responsibility denies that business has any direct environmental responsibility" and suggests an alternative to the above which holds that business has a "moral responsibility" to ensure that its activities are "ecologically sustainable". He argues that while business should remain "free to pursue profits within the rules of the game…. the rules must be changed to include the obligation to leave natural ecosystems no worse off in the process" (1998: 831).

Both Adam Smith and Friedman's economic philosophies are a bullish approach with no consideration of the environmental impacts. Capital gain is the driving force, yet on the other extreme, sustainable development also includes social and environmental responsibilities as was pointed out in Chapter 4. Smit and Cronje (2002:452) believe that

most managers' views fall between the two extremes of capital gain at all costs and a sustainable approach with social responsibilities. However, this once again points to an anthropocentric approach with little direct focus on environmental needs.

5.3.1 Shareholder and stakeholder theories of corporate governance

There is much debate about two distinct theories of corporate governance, namely shareholder and stakeholder theory. As the concepts of shareholders and stakeholders will often be mentioned in the following paragraphs, I will briefly summarise these two approaches. Moriarty (2016:4) explores shareholder primacy and stakeholder theory as the two main views about the proper ends of corporate governance. The former view argues that "firms should be managed in the best interests of shareholders" which typically means "maximizing their wealth". This argument may be based on deontological grounds (as the shareholders own the company and there is an implicit agreement that managers will promote their interests) or consequentialist grounds (in that this approach is the most efficient way to manage the business). On the other hand, stakeholder theory, first put forwards by Freeman in the 1980s, suggests that "managers should seek to "balance" the interests of all stakeholders, where a stakeholder is anyone who has a "stake", or interest (including a financial interest), in the firm" (Moriarty, 2016: 4). These include, but are not limited to, shareholders, employees, the community, government, competitors, clients, and suppliers. This view suggests that businesses are embedded in a network of relationships. Freeman (1984) as cited by Moriarty (2016:5) offers an instrumental argument for this opinion, stating that assessing stakeholders' interests is strategically better for the company than expanding shareholder wealth. However, both these theories have been criticized for ignoring the environment as a participant in their enterprises, as they both take an anthropocentric approach and focus on the interests of human beings (Moriarty, 2016:5).

5.3.2 Corporate Social Responsibility as a voluntary concept

The typically voluntary nature of CSR is affirmed by the European Union's (EU) definition of CSR as: "… a concept whereby companies integrate social and environmental

concerns in their business operations and with their interactions with their stakeholders on a voluntary basis" (EU, 2001:4). This definition was revised in 2011 as:

> [T]he responsibility of enterprises for their impacts on society. Respect for applicable legislation, and for collective agreements between social partners, is a prerequisite for meeting that responsibility. To fully meet their corporate social responsibility, enterprises should have in place a process to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders, with the aim of: i) maximising the creation of shared value for their owners/shareholders and for their other stakeholders and society at large and ii) identifying, preventing and mitigating their possible adverse impacts (EU, 2011:6).

Mazurkiewich (2004:1) from the World Bank asked the pertinent question "is a common CSR framework possible?" and concluded that, although companies are often evaluated on the basis of their impact on their environments, CSR activities remain voluntary in most contexts. Often, environmental impacts may be apparent to stakeholders but cannot be verified. Furthermore, there is no comprehensive framework that covers issues such as "management systems, codes of conduct, performance standards, performance reporting, and assurance standards". Roach (2013:4) argues that it is doubtful that corporations will voluntarily align their behaviour with the larger social and environmental goals of society. Corporate decision makers are more likely to attend to the needs of the shareholders and therefore fail to recognize and consider the impacts of their decisions beyond this. Moriarty (2016:4) cites Friedman (1970) and Hasnas (1998) who argue that organisations are managed for the primacy of shareholders. Moriarty (2016:5) points out that neither shareholder primacy (nor stakeholder theory) should be interpreted that managers have free reign to maximise shareholder wealth. Rather managers should do what is morally permissible to achieve those goals. However, it is unclear if what is morally permissible refers to business transactions, or whether this includes social and environmental issues. As noted in the previous section, it is often the case that the environmental questions are neglected in such discussions where human interests remain the primary focus.

5.3.3 Corporate Social Responsibility in Africa

Cheruiyot and Onsando (2016:94) in their critical review of CSR in Africa define CSR as: "Organization[al] commitment to economic, social, legal and environmental rights, and

responsible outcomes for sustainability of the human race". They argue that CSR in Africa is still a "misunderstood, misused, and abused concept" due to the diverse conceptualisation and implementation of CSR. Furthermore, CSR is disordered with a plethora of synonyms which makes the interpretation of the concept of CSR flexible and open to various interpretations (Cheruiyot & Onsando 2016:91).

Cheruiyot & Onsando (2016:94,95) are of the opinion that, whilst CSR theories and practices are formulated in developed countries from the Western world, these theories "are not totally applicable in Africa". This is due to the "differences in structural, institutional and cultural drivers of CSR between Western and African countries". The CSR issues of concern in Africa are inter alia corrupt business practises, political and socio-economic factors, poor communities in proximity of business or developments, environmental impacts, minimum wages, tax evasion and public health, including HIV/AIDS.

One of the CSR challenges in Africa is the level of social expectations of governments. Organisations are often expected to address social problems, for example, above and beyond those social issues for which they are directly responsible. Worse still is that governments may abdicate some of their social responsibilities and allow companies, less accountable and transparent, to render those services. Enterprises also use this opportunity to buy favour from government or corrupt politicians. Furthermore, many African countries have weak laws which are often poorly enforced (Cheruiyot & Onsando, 2016:98-100).

Fig (2005) argues that in South Africa, business has responded weakly with regard to the demand for CSR, and that voluntary initiatives with regard to sustainability, such as agreements on limiting pollution, have not succeeded, and that "compliance with black economic empowerment charters and environmental standards have to be legislated and regulated".

CSR in South Africa, also referred to as Corporate Social Investment (CSI) or Corporate Social Development (CSD), may mean different things to different people. To some it is about complying with Broad Based Black Economic Empowerment (B-BBEE) legislation and to others it is a purely philanthropic act[4]. Sceptics might believe it is for media attention. Others interpret it as a responsibility to society on the basis that the business owes something to society. These are, however, all anthropocentric interpretations of CSR which are not in the spirit of NEMA which states that development is built on three equal principles: social, environmental and economic.

The provisions of the National Environment Management Act, 107 of 1998 (NEMA) and the EIA Regulations are not explicit on CSR and it is therefore voluntary in nature. However, two principles as set out in Chapter 1 of NEMA clearly imply CSR by stating:

i. Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably; and
ii. Development must be socially, environmentally, and economically sustainable.

Although NEMA, as the principal environmental law in the country, is not explicit on CSR, even this document appears to take a strong anthropocentric approach to environmental care as it puts people and their needs before the environment and its ecosystems which produce goods and services for the sustainability of mankind.

Skinner & Mersham (2008:110) point out that the South African Government's prescriptive stance on transformation and Black Economic Empowerment (BEE) has

[4] The BBBEE Act, Act No 53 of 2003 with the BBBEE Codes of Good Practice of 2007 were initiatives that were implemented and enforced by the South African government to promote social and selective economic development. Skinner and Mersham note that "[u]ntil May 2015, government policy was based on the "voluntarist" principle, providing a methodology for measuring the BBBEE rating. Significant changes to the Act took effect from 1 May 2015. The most significant is that the new framework introduces penalties in certain circumstances. This is an important departure from previous government policy. A full array of policies, procedures, legal requirements, codes of good practice, and scorecards including punitive measures, such as hefty fines and even the possibility of imprisonment for non- or partial compliance (2008:112).

ensured that CSR appears on every corporate agenda in South Africa. CSR has become a pursuit focused upon performance amongst businesses seeking to improve their BEE scores, implying that "the South African CSR landscape continuous to develop characteristics that make it unlike that of any other country" (2008:111). In this regard, Kirby (2014) notes that in South Africa, legal conditions exist for the purposes of formulating and implementing CSR programs, and that "the encapsulation of CSR in legal provisions, through the introduction of social and ethics committees may indeed be an appropriate manner" to ensure that CSR issues are dealt with by companies.

It is also clear the pursuance of CSR in South Africa may be argued to be driven by BEE scores and by legislation and that the motivation for CSR is therefore not to incorporate focus on social, environmental, and economic needs in equal proportions. CSR in this sense is prescribed to organisations, rather than being seen as voluntary, or as a moral obligation of the organisation. While voluntariness has also been shown to have its pitfalls, legal prescriptions may on the other hand lead to some companies limiting their sustainability actions to what is required and seldom going beyond what is required by legislation. Skinner & Mersham (2008:126) note in this regard that, although "South Africa remains the continental leader in CSR", there remains "disagreement about whether the prominent role of government" ultimately contributes to a positive transformation of society.

5.3.4 Assessment of the practice of CSR

DesJardins (1998:825) argues that "a theory of corporate social responsibility must be consistent with a model of sustainable economics rather than the prevailing neoclassical model of market economics". However, he notes that the traditional models of CSR, as discussed in this chapter, typically do not acknowledge any direct environmental responsibility (1998:827). Upon further investigation of organisations' responsibility towards the environment forthcoming from their CSR, Chapple *et al*. (2004:1,2) found in their research that CSR is largely driven by increased demand for "transparency" from stakeholders and reputational and market benefits for the company from positive environmental activities. Chapple *et al*.'s study likewise found that the organisations'

motives were anthropocentric, and that the environment was seen solely as a means to their success. Likewise, Wilson (2010:1) reviewed companies' CSR policies and inferred that often, CSR policies may be seen as "greenwashing", and that the multitude of unsustainable practices amidst some sustainable practices implies dishonest propaganda.

5.4 Reporting of Corporate Social Responsibility agreements

The King Report on Corporate Governance seeks to ensure that CSR activities in South Africa are reported and is focussed on achieving impacts that are both appropriate and sustainable. This report constitutes a set of guidelines for the operation and governance structures of organisations in South Africa and is based on information supplied by organisations with regards to their social, economic, and environmental performance (King, 2009:15,16). It is issued by the King Committee on Corporate Governance, and calls for integrated reports to be issued by organisations that "are expected to communicate a company's plans, governance, performance (social, economic, and environmental) and forecasts to relevant stakeholders in a manner which correctly provides the holistic context of business operations" (International Integrated Reporting Council, 2013). The purpose of CSR is to inform stakeholders of an organisation's measured environmental, social and economic performance. Two types of corporate environmental reporting are found in SA, legislated for companies trading on the JSE and voluntary for others. However, corporations can choose their disclosure information as well as third party auditing to provide credibility to the report.

Another form of legally required environmental reporting in South Africa is when construction or development activities require an Environmental Impact Assessment (EIA), done by a registered professional, for approval of the project. Once the project has been approved under certain conditions, the NEMA, Act 107 of 2008 requires that these conditions be audited, and the audit report is submitted to the relevant authorities and made available for stakeholders to peruse.

Dube and Maroun (2017: 26) note that mining companies in particular are “under pressure to convince stakeholders of the valuable role which they play in the South African capital market and the positive social contribution which they offer” given the negative social and environmental impacts often associated with the industry, and that “[t]o this end, they devote considerable attention to the nature and extent of CSR information being included in their reports to stakeholders” (2017: 26). They also point out that following the Marikana incident in 2012, mines and other industries responded to “the threat to their legitimacy” by seeking to “regain favour with important stakeholders and avoid public policy intervention” with “the integrated report being the primary platform” for communication. Dube & Maroun (2017:27) cited Patten (1992; 2002) who established a relationship between the acceptability of the organisation in its community and social disclosures. They found a significant increase in environmental-related disclosure after the accident that is consistent with the strategy of repairing relationships with the stakeholders.

CSR in the modern day should be a moral consideration, however, the example cited above and the discussion in this chapters shows that for many organisations, CSR is seen as a tool used to appease stakeholders, for example, at the time of a major event. In addition, CSR seems largely to be interpreted in an anthropocentric fashion, with focus primarily on human interests rather than direct duties to the environment. In addition, the way many corporates present their annual CSR report by failing to present negative environmental impacts, or environmental audit findings, as noted in Chapter 1, makes it clear that anthropocentrism is embedded in many corporate cultures and conscious acts.

5.5 Summary

In this chapter two views of CSR were discussed: 1) the views of Friedman who believed that in the long-term individuals and organisations best serve public interests by pursuing their own self-interest and 2) the alternative which holds that business has a moral responsibility to ensure that its activities are socially and ecologically sustainable whilst remaining free to pursue profits. It was also found that interpretations of CSR on the whole are largely anthropocentric, with little direct focus on inherent moral responsibility for the environment.

The aim of the research is to determine if corporate codes of environmental conduct make an inherent contribution to sustainable development in the mining sector. CSR as discussed above is a three-tier ethical approach to environmental, social and economic responsibility to the community in which the enterprise operates. This chapter explored the development of CSR and concluded that there are various interpretations of the concept, and that even when the environment is included, it is often not seen as on par with social and economic responsibilities.

Although a properly implemented CSR policy can bring along a variety of competitive advantages (UNIDO 2019) there are still organisations who prefer not to report or do selective reporting. Various authors also pointed out that CSR is often just “green washing” and that, following significant negative publicity, the industry responds to the threat to acceptance by regaining favour with important stakeholders via increased reporting on environmental issues. The question may therefore be asked if environmental care, as proclaimed in corporate environmental codes of conduct and reported in the annual CSR reports, is sincerely adhered to. The following chapter will present the research methodology of the empirical component of the research conducted to address this question.

CHAPTER 6: RESEARCH METHODOLOGY

6.1 Introduction

Chapters 1 to Chapter 5 presented a literature review which explores the corrosion of the environment and its services and goods due to anthropocentric activities and the ensuing development of an environmental conscience and ethic. This review pointed out that businesses such as mines often ignore their impacts on biodiversity and trade it off against social responsibilities and, also explored the development of environmental codes of conduct and CSR reporting. This following chapters will present the empirical component of the study and investigate if corporate environmental codes of conduct contribute to sustainable development in the mining and related industries. This chapter will elaborate on the research methodology followed and the data analysis techniques used in this component of the study.

Goundar (2012:15) points out that "[r]esearch methodology includes a philosophically coherent collection of theories, concepts, or ideas as they relate to a particular discipline or field of inquiry". This does not only entail a set of methods, but also the "rationale and the philosophical assumptions that underlie a particular study". Neuman (2014:93) states in this regard that "research methodology rests on a foundation of ontological and epistemological assumptions" and that when a researcher does a study, they are "making assumptions about what [they] will study and its place in the world" (Neuman 2014:94).

6.2 Research approach

Neuman (2014:167) defines a research approach as the systematic process and procedures followed to collect data, which can be examined and interpreted to create an understanding and explanation of the research topic or phenomena. Qualitative and quantitative research are the two main research approaches that will be discussed in this section, as well as "mixed methods research as a newer and thus less fully developed approach to doing social science research" (Morgan 2014: 45). The research method that

is selected is crucial with respect to the conclusions the researcher can make about a phenomenon.

6.2.1 Qualitative research approach

A qualitative research approach is applied to explore a specific social and cultural phenomenon (Myers, 1997:2; Goundar, 2012: 19). The researcher aims to collect in-depth descriptive data to gain a clear understanding and interpretation of the research topic. Qualitative research focusses on how participants perceive and interpret the world and how they construct meaning from their experiences (Nieuwenhuis, 2007a:50). Qualitative data is non-numerical and focuses on establishing patterns.

According to Szyjka (2012:111), qualitative research assumes that reality is socially constructed, and the variables are interconnected and complex to measure. Quantitative and qualitative research asks different kinds of questions (Maxwell 1996: 20). For example, “[q]uantitative researchers tend to be interested in whether, and to what extent, variance in x causes variance in y. Qualitative researchers, on the other hand, tend to ask how x plays a role in causing y, or what the process is that connects x and y” (Neuman 2014:99).

In qualitative research, participants disclose their personal experiences, narratives, beliefs, and perspectives related to a specific context. The qualitative researcher acknowledges that the information collected is subjective, but it is taken as the truth as other interest groups within the same context might share similar experiences, beliefs, narratives, and perspectives. The researcher does not manipulate the data nor generalise it to a larger population group (Nieuwenhuis, 2007a:55; Nieuwenhuis, 2007b:79; Szyjka, 2012:112).

6.2.2 Quantitative research approach

Quantitative research aims to explore and explain a phenomenon through numerical data (Myers 1997:2). Mathematically based methods are applied to analyse the collected data (Sukamolson 2007:2) and the information gathered is broadly generalised across a larger

population group (Szyjka 2012:113). Morgan states that quantitative research is “typically deductive, objective and general” (2014: 9). Quantitative data can be represented using graphs and tables.

De Vos *et al*. (2011:144) puts it that quantitative research can be categorised into two main research designs. The first, being experimental research, is adopted for cause-and-effect research where a comparison between a control group and an experimental group is being explored. Non-experimental research design, as the second main research design, is mainly adopted for descriptive studies in which specific units are measured on all the variables during a period (Maree & Pietersen, 2007a:152). No control group is involved in non-experimental research studies and no manipulation of the data, variables or participants take place in the research. Survey research methods are utilised for non-experimental studies as they allow the researcher to describe and explore the quantitative data collected (Maree & Pietersen, 2007a:152).

6.2.3 Mixed methods research

Mixed methods research incorporates both qualitative and quantitative research methods, and allows for explanation of unexpected results (Morgan, 2014: 58). This research approach “makes it possible to do things that would be more difficult or even impossible to accomplish by operating solely within either the inductive-subjective-contextual or the deductive-objective-general packages that characterize the two more traditional approaches”. This research methodology involves “collecting, analysing and integrating quantitative and qualitative research” (Morgan, 2014:57-62).

6.2.4 Implementation of a mixed method research approach

A mixed method research approach was used to collect data in this research study. In this study, a questionnaire was designed which gathered quantitative date, but also included open-ended questions which sought in-depth descriptive, or qualitative data. The advantages for using this method includes offsetting the weaknesses of both quantitative and qualitative research and providing a more complete and comprehensive understanding of the research problem (Morgan 2014:57-60).The disadvantages and

limitations are *inter alia* that it may be unclear how to resolve discrepancies that arise in the interpretation of the findings (Morgan 2014:58).

6.3 Research method

Bryman (2016:40) and Creswell (2003:5) describe a research method as the specific technique or procedure adopted to collect data, including the instruments that were used to collect and analyse it. In this study, a web-based survey was used. Survey research is the most popular type of quantitative research. This method is efficient in terms of being able to gather large amounts of data in a short time at reasonably low cost and effort, and makes it easier to "guarantee respondents' anonymity which may lead to more candid answers than less anonymous methods" like interviews. Muijs (2004) also points out that survey research is "particularly suited for canvassing opinions and feelings about particular issues", and that the use of standardized questions "allows for easy comparability between respondents and groups of respondents". In addition, the researcher does not influence the responses or answers of the participants when using this method (Neuman (2014:347). Web-based surveys also allow the researcher to have immediate access to the results and to track the number of surveys completed. The collected data can be captured and extracted directly from the database where the responses from the survey are automatically stored and inserted into a spreadsheet or statistical package, which makes the statistical analysis process easier. Human error is limited as the data does not have to be manually captured. Multiple format designs can be used in the survey, for example, multiple choice, Likert scale and descriptive questions and the participants can complete the survey at their leisure and at their own pace, without any geographical limitations (Jansen *et al*., 2007:4; Oates, 2006:46; Kalantari *et al.,* 2011: 937). However, when following this approach, one must be cognisant of possible technical difficulties which can cause a decrease in return rates. The population group could be limited in a web-based survey, as only participants who have access to the Internet and electronic devices can receive and participate in the research study (Jansen *et al.,* 2007:4 and Kalantari *et al.,* 2011: 937).

6.3.1 Implementation of a survey

This research study made use of a web-based survey to collect quantitative and qualitative data from employees in middle and senior management positions in the mining and related industries. Contact was telephonically established with the Human Resources Department of the various mining houses and a follow-up explanatory letter was sent via e-mail to the relevant person. A copy of the letter is attached as Annexure 2. The respondents were all professional people in managerial positions working in various departments of the organisation. The link of the web-based survey was included in the covering letter as well as the e-mail to provide the participants with easy access to the web-based survey. Once the survey was completed and submitted the data was immediately stored online for later analysis (Jansen *et al.*, 2007:3).

Oates (2006:94) notes that the planning and conducting process of surveys consists of the following six activities: 1) data requirements; 2) data generation method; 3) sampling frame; 4) sampling techniques; 5) sample size; and 6) response rate and non-responses. These six activities were used in the planning and conducting phase and will be discussed in the following sections.

6.3.1.1 Data requirement

According to Oates (2006:94), data requirement refers to the relevant data that should be collected from the questionnaire to answer the research question. The data required should relate directly to the topics associated with the research questions. The indirect data requested refers to the demographics of the respondents.

The questions were formulated based on the paper of Rattray and Jones (2005:234) on questionnaire design and development and the study of corporate environmental responsibility by Dummett (2008).

6.3.1.2 Data generation method

Data generation method refers to the type of method adopted to gather the data (Oates, 2006:94). A web-based survey was adopted for this research study which the participants could complete at their convenience.

The questionnaire was made electronically available to the participants and the survey was conducted through SunSurveys. The participants completed the survey online, a benefit being that the responses remained anonymous, and were immediately stored and available to the researcher. In addition, the data could be easily downloaded into an MS Excel spreadsheet for statistical analysis.

6.3.1.3 Sampling frame and technique

The sampling frame alludes to a list or database which consists of the potential respondents which can be included to participate in the research study (Oates, 2006:95). A sample is a subframe of a population (Acharya *et al*., 2013: 430). According to Maree and Pietersen (2007c:172), time and cost restraints limit the researcher to reach out to a large population group. It is therefore critical that the sample of participants should be valid and the results generalisable to the larger population (Maree & Pietersen 2007c:172).

As it was not possible to obtain a list of all middle and senior managers of the mining houses, a convenience sampling technique was applied by requesting the HR Departments to supply the names and contact detail of several such managers. A convenience sample is a nonprobability sampling technique in which the participants included in the study are based on the criteria that they were easily accessible and conveniently available. The benefits of applying convenience sampling are that it is cost effective and a quick process, though it has been criticised as being flawed as it is difficult to control and measure the variability and bias of the population group (Acharya *et al.*, 2013:332; Maree & Pietersen 2007c:177).

The skill set required of the sample group was a post matric or higher qualification and a middle or senior managerial position in the organisation. These individuals are deemed competent to be involved in the business and make decisions and contributions in sustainability related issues at a high level at their company.

For this research study, the term “respondent” will refer to a professional person involved in high-level decision making and responsible for evaluating and approving decisions on sustainability related issues. The respondents who met the criteria and who had an active LinkedIn account and/or e-mail address could participate in the research study. The respondents are all from the mining or related sectors, informing a shared experience, but from different companies to ensure independent and wide-ranging findings.

6.3.1.4 Sampling size

Maree and Pietersen (2007c:178) state that having an appropriate sample size is critical to ensure that the larger population is adequately represented, and that the data can be generalised. During determination of the sample size, the researcher should take response and non-response rates into consideration (Oates 2006:100) as well as the type of statistical analysis that will be applied, the accuracy of results required, and the population characteristic (Maree & Pietersen 2007c:178).

Based on studies by Cook *et al.* (2000:821) “surveys with…low response rates can be more accurate”, if the sample is representative to the study, “than surveys with much higher response rates” and a non-representative sample. The representativeness of the sample is thus as important as the sample size for a specific research topic. Ninety-six questionnaires were sent out with a net response of 30 (n=30) or a mean of 31.25%.

6.3.1.5 Response rate

Some researchers have found that response rates to web-based surveys are somewhat lower than to other survey methods (Fan & Yan 2009:132 and Cook *et al.* 2000:829). In general, a minimum of 30 responses are enough for statistical analysis to be performed, however, many responses would better represent the larger population group and more reliable results could be obtained (Maree & Pietersen 2007c:179). Various factors such as the topic relevance, length of the questionnaire, the number of questions, internet availability, technical failure and computer viruses contribute to the response rate (Cook *et al.*, 2000:832 and Fan & Yan 2009:133,137). The mean response rate of this research was 31.25%.

Although detailed written information was given on a letterhead from the University of Stellenbosch to the invited participants, as well as a verbal explanation on the exact requirements and process, a slow response was detected. A follow up call was made to some of the respondents which indicated that the field of study deterred them from participating since they did not appreciate or understand the value and applicability of the study within the broader environmental ethical context. Others had a poor or negative perception of the study and one potential respondent argued that it is an overly sensitive questionnaire. Three potential respondents indicated that they are completely disinterested in the research topic. However, there could also be some specific individual and organisation-level barriers that could have affected participation in this study. The participants were once again ensured of confidentiality and anonymity and the deadline was extended by another two weeks.

6.4 Research design

Kothari (2004:34/35) described three research designs, 1) exploratory or formulative research, 2) descriptive and diagnostic or conclusive research and 3) research design as in the case of hypothesis-testing research studies. Exploratory research method was used for the purpose of this study as this study explores the research questions while leaving room for further studies.

6.5 Data collection technique

Data collection techniques are defined by Qates (2006:36) as the process followed to generate empirical data or results. Data generation techniques include techniques such as interviews, documents, questionnaires, and observations. In survey research, a questionnaire is a popular data generation technique used to produce quantitative data (Walliman, 2011:97). As a web-based survey was adopted for this research study, the following paragraphs will focus on how the questionnaire was developed and implemented.

6.5.1 Questionnaire

A questionnaire is a tool used to collect information (Leung 2001:187) which serves as a communication medium between the researcher and respondent (Brace 2008:4). The questionnaire allows the researcher to pose a set of specific questions in a pre-determined order. The respondent in return provides information which is converted into a numerical formation (Brace, 2008:4; Oates, 2006:219; Rattray & Jones, 2007:235). For a questionnaire to serve its purpose it should be appropriately designed to enable the participants to provide meaningful and correct information (Brace, 2008:3,7; Leung, 2001:187).

6.5.2 Design and development of a questionnaire

Rattray and Jones (2007:234) and Leung (2001:187) argues that a logical, systematic and structured approach should be followed when developing and designing a questionnaire. A poorly developed questionnaire will limit the researcher from obtaining high-quality feedback, and the interpretation of the results will be difficult. Brace (2008:35) as well as Leung (2001:187) stress the importance of clearly formulated research objectives before developing the questionnaire. Clearly defined research objectives will define what questions should be included and will prevent the researcher from including questions of interest which are irrelevant.

The first research objective of this study was to establish if there are specific approaches towards the environment in the interpretation of environmental codes of conduct by the employees. The second objective was to determine the environmental approach taken by environmental codes of conduct. The third objective was to investigate whether corporate mitigation measures are motivated by a sense of “the right thing to do”, or merely adopted because of legal requirements. The fourth objective was to determine the environmental ethical approach of employees, and the final objective was to determine if employees are accordingly informed to make environmentally sustainable decisions.

6.5.3 Administration of the questionnaire

Questionnaires were completed through self-administration in that participants completed the questionnaire based on their own interpretation and understanding of the questions in their own time and at their own pace at a time convenient to them. (Brace, 2008:110, 31-32). The researcher was not involved during the completion process of the questionnaires.

6.5.4 Content and wording of the questionnaire

Leung (2001:187) and Oates (2006:221) state that the way questions are phrased is important to ensure that insightful data are gathered from the questionnaires. Consulting with experts involved in the field of interest and potential participants can provide valuable insight regarding the suitable wording and phrasing (Rattray & Jones, 2007:237). Conducting a literature review related to the research topic ensures that the correct concepts are used (Oates 2006:221). Rattray and Jones (2007:237) recommend that a pilot study be conducted to refine the phrases, words and content of the questionnaire. The content and wording of the questions used in this study was done in consultation with an environmental consultant. The questionnaire was further adapted after comments were received from the pilot study.

6.5.5 Type of questions

Oates (2006:222) highlights that the questions posed should present factual data and options. Two types of questions can be identified: open-ended or unstructured, and closed-ended or structured types. The former gives the respondent an opportunity to provide his or her own explanation or comment, while the latter restrict the respondent to selecting a suitable answer pre-defined by the researcher (Maree & Pietersen 2007b:161, Oates 2006: 222).

Three open- and 34 closed-ended questions were used in the questionnaire used in this study (refer Annexure 3). Some questions had an option to choose “do not know” or “rather not say” if none of the listed options were applicable and a blank space was made available to provide additional answers.

6.5.6 Format of the questions

Questions can be posed in various forms, such as multiple-choice, agree or disagree statements, choice of categories, Likert scale and differential scales (Maree & Pietersen 2007b:161-167, Rattray & Jones, 2007:188).

The first section of the questionnaire was set up to establish the demography of the respondents. The second section consisted of three open-ended questions and 29 multiple-choice questions. Various options were listed, and the respondents had to select the answer applicable to their unique circumstances (refer Annexure 3). Section 2 of the questionnaire made use of, *inter alia,* a Likert scale as the respondents had to indicate the extent to which they agree or disagree with the statements (the scale options entailed: 1 = Strongly disagree; 2 = disagree; 3 = neutral; 4 agree and 5 = Strongly agree). The participants had to indicate to what extent certain sustainability issues are important, where 1 = not important, 2 = somewhat important, 3 = important and 4 indicates very important. There are also fill-in format questions in this section which are classified neither as open nor closed questions. Fill-in questions provide a statement or question with a blank space in which the participant could type in a one or two-word answer.

6.5.7 Structure and layout of the questionnaire

Layout and structure refer to the availability of required information and instructions about the research study and questionnaire. The questionnaire was designed to determine to what extent environmental codes of conduct contribute to sustainable development in the mining sector, as well as to determine how seriously sustainability is taken at the managerial levels in the organisation. The questionnaire also investigates if sustainability is still largely a back-office function providing information, training, monitoring, and reporting, or whether it a frontline role with direct implications for the functioning of all departments. Finally, it also sought to determine what resources organisations dedicate to sustainability.

Instructions and background information were provided throughout the questionnaire to ensure clarity about what was expected. The questionnaire consisted of the following two sections (refer Annexure 3):

i. Section 1 (question 1 to 5) was developed to collect basic demographic information specific for the purpose of this study.
ii. Section 2 consisted of 32 questions of which the majority were multiple choice. This section was designed to establish if there are environmental codes of conduct to guide the organisation and if the employees are aware of such a code, and also to determine the approach of these codes to environmental care. The third objective was to investigate whether corporate mitigation measures are motivated by a sense of “the right thing to do”, or merely because of legal requirements and to determine the environmental ethical approach of employees. The last objective was to determine if employees are informed to make environmentally sustainable decisions.

As noted above the first section of the questionnaire collected demographic information of the respondents while the second section look at the sustainable management practices used in the various organisations. Questions 6-10, 27 & 29 investigate the importance of sustainability in the organisations, while questions 13-15, and 24 & 25 explore the structure of sustainability in the organisations. Questions 11,12, 31 & 32 looks at the cost of sustainability management while questions 16 to 18, 20, 21, 30, 33 & 36 investigate the ethical issues with regards to the organisation’s published commitments in their annual reports. The return on sustainability investments are investigated under questions 19 & 34. For sustainability-minded companies, proactive engagement with a range of groups in terms of new ideas and approaches could yield dividends. This is explored in the response to questions 22, 23, 28 & 35. Question 26 refers to problems experienced with regards to sustainable management by the respondents in their workplace and Question 37 asked for any additional comment.

6.5.8 Pre-test process and pilot study

A pre-test is a process in which the content of the questionnaire is provided to a small group of experts or authorities in the field of interest for review and comments (Oates (2006:226). A pilot study, on the other hand, entails providing the questionnaire to a small group of people who meet the criteria of the target participant population to complete as if they were participating in the final research study (Rattray and Jones 2007:237), after which they provide feedback. Rattray and Jones (2007:237) point out that a suitable pilot study is crucial as items which require clarification or rewording are highlighted.

The researcher tested the questionnaire with an environmental consultant and received valuable comments from the pre-test to understand uncertainties the participants might encounter. The questionnaire was accordingly adapted before sending out the pilot study. Before the pilot study was conducted, the questionnaire underwent language editing and attention was given to the length of the phrases to ensure that the questions were clear, precise and only attended to one piece of information per question (Leung 2001:187).

The questionnaire was e-mailed to two environmental managers, two engineers employed at mines, and one environmental consultant, all practicing in South Africa. The five respondents were informed that they would not be included in the final survey. Four responses were received and from the feedback, two additional questions and a more detailed description of what sustainability and biodiversity entail was incorporated in the final questionnaire.

6.6 Data Processing and analysis

According to Oates (2006:245) and Walliman (2011:113) the objective of data analysis is to make forecasts as well as identify, explain, and explore relationships that exist in the collected data. This section will focus and discuss methods of analysing the quantitative data collected. Walliman (2011:113) and Oates (2006:245) noted that quantitative data analysis translates numerical values through mathematical processes and computer software programs into meaningful information which can be used to explore and understand the topic.

A nett of thirty respondents participated in the study. The data was extracted from the online server into an MS Excel sheet, and is expressed in graphic and numerical form. Written comments received from the respondents were qualitatively analysed. Walliman (2011:130) explains that the qualitative data analysis process does not focus on numerical data but on non-numerical data, which is expressed through words, images, or sounds. The content of the data is rich, detailed and context specific (Neuman 2014:479).

6.7 Summary

This chapter discussed the research methodology used for this research study. The research model applied in this study was outlined. Furthermore, this chapter presented the way that the survey was conducted. The procedure followed to identify and contact the respondents was explained as well as the method of data capturing and processing through SunSurveys.

Loe *et al*. (2000) quote Aristotle who suggested that “when observations fail to support theory, the theory must be abandoned for theory that can be supported by empirical testing”. I wished to prove through an empirical study, by means of a questionnaire, that significant environmental considerations are not integrated, by means of practical application, in the workplace. The core question explored in this study is whether environmental codes of conduct and policies actually contribute to sustainable development. The results that were gathered from the questionnaire and supplied by SunSurveys will be analysed and discussed in the following chapter.

CHAPTER 7: OUTCOMES AND INTERPRETATION OF THE QUESTIONNAIRE

7.1 Introduction

The previous chapter elaborated on the research methodology followed in the empirical component of this study. This chapter will analyse and present the responses to the questionnaires sent out to the respondents.

7.2 Section 1: Demographic data of respondents

The first section of the survey (refer to Annexure 3) obtained the demographic information of the respondents. The respondents work in a range of sectors within various mining and related companies. The sectors in the businesses include environmental, engineering, finance, and commodity management. The respondents were mostly senior employees and all of them are appointed in a managerial role. The information they have provided offers valuable insights into the current condition of corporate sustainability. All the respondents are employed by South African based companies. This section will address Questions 1 to 5 of the questionnaire.

7.2.1 Level of qualification/education

Question 1 sought to determine the respondents' educational qualifications, and results are indicated in Figure 1 below. One respondent has post matric certificates and one a PhD while 15 respondents or 50% have post graduate qualifications. Thirteen respondents (43.34%) have either a National Diploma or a degree.

7.2.2 Designation

The profession of the respondents can be broken down into eight categories. Most of the respondents, 30% (*n*=30) are involved in the environmental sector of their business while 20% are engineers. Supply Chain and those who indicated "Other Departments" are each represented by 4 respondents or 13.3%. Three respondents (10%) indicated that they worked in Project Management and two (6.7%) indicated that they are directors or partners. One each (3.3%) worked in Business Development and Finance.

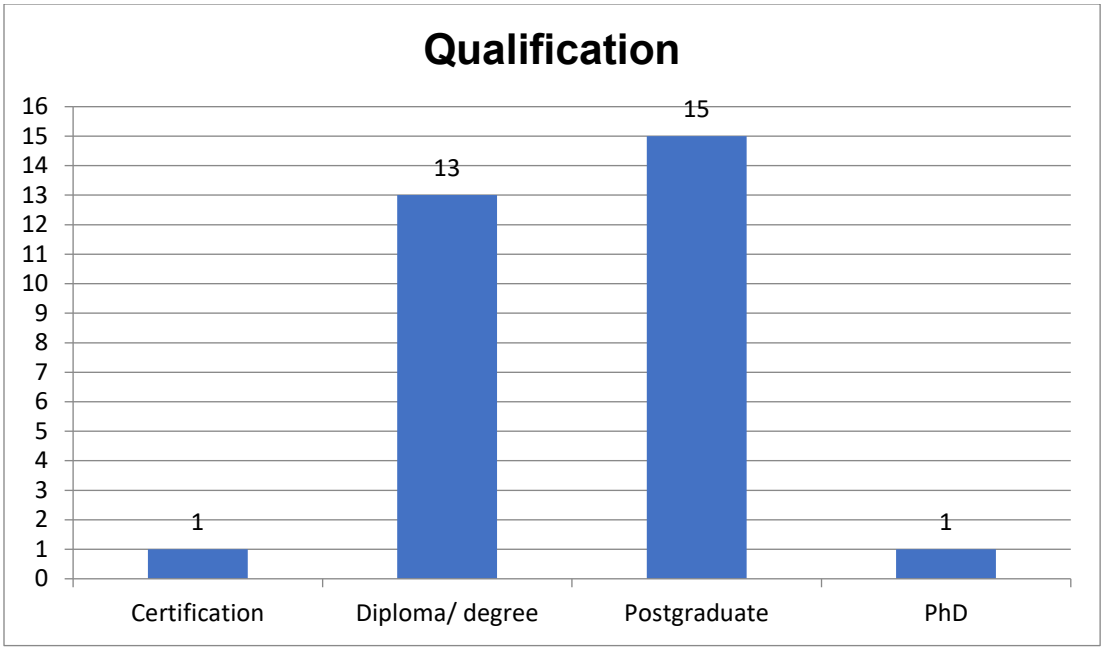


Figure 1: The respondents' educational qualifications

7.2.3 Amount of years working in designation

Most of the respondents, 63.3% (*n* =30) indicated that they have been in their respective positions more than three years. It can thus be deduced that they do have the exposure in the company as well as the experience necessary to give a valuable response to the questionnaire. Figure 2 below gives a breakdown of the respondents' service record.

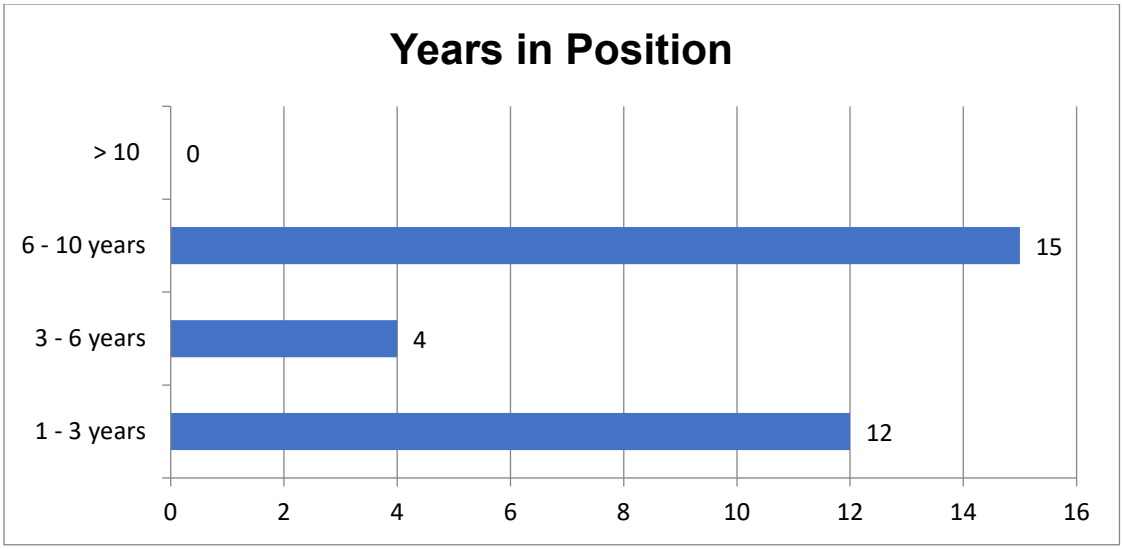
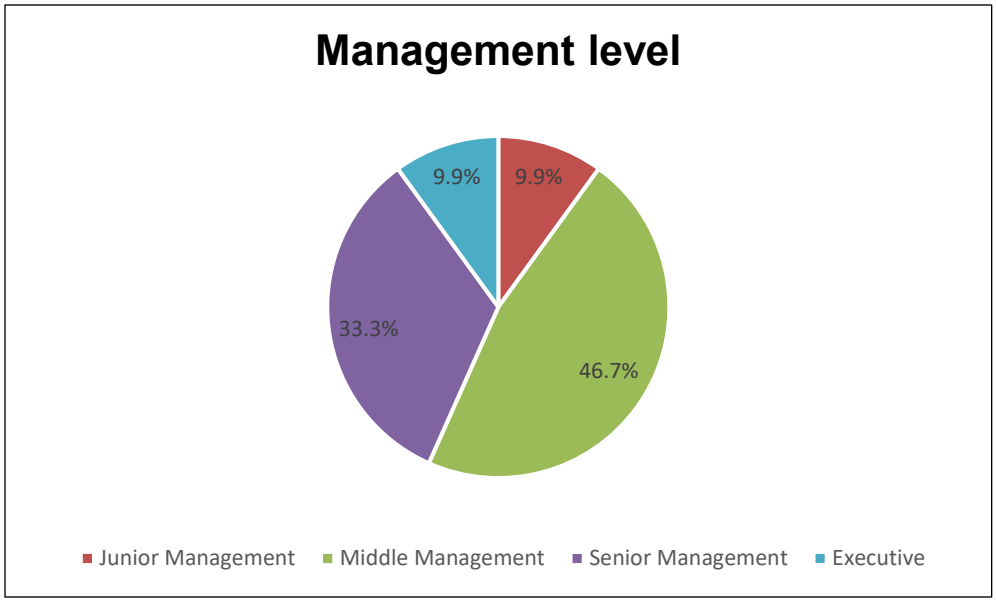


Figure 2: How long have you been in this position?

7.2.4 Management level of the respondents' positions

Question 4 of the questionnaire established the extent to which the participants had been assigned responsibilities with reference to their managerial positions in the organisation. Of note is that 80% (*n*=30) of the respondents fill middle and senior management positions in their respective organisations while 10% were in the junior management category. The balance, 10%, were in the executive category. Figure 3 below depicts the management level of the respondents.

7.2.5 Area of employment



The last question in Section 1 of the questionnaire refers to the respondents' place of employment. The respondents were drawn from a diverse group of organisations of which the majority, 47% (*n*=30), work at mines in various capacities. Three (10%) worked at the mines' head office away from site and two (6.7%) each in environmental management and environmental rehabilitation on the mines. The rest of the respondents,

Figure 3: Management Level of Respondents

9 individuals or 30% worked in various mining related activities which included, *inter alia,* an environmental lawyer, a provincial government official concerned with environmental authorisations, representatives from construction and manufacturing industries on the mines' premises and waste management and recycling on the mine. The breakdown of the respondents' place of work is depicted in Figure 4 below.

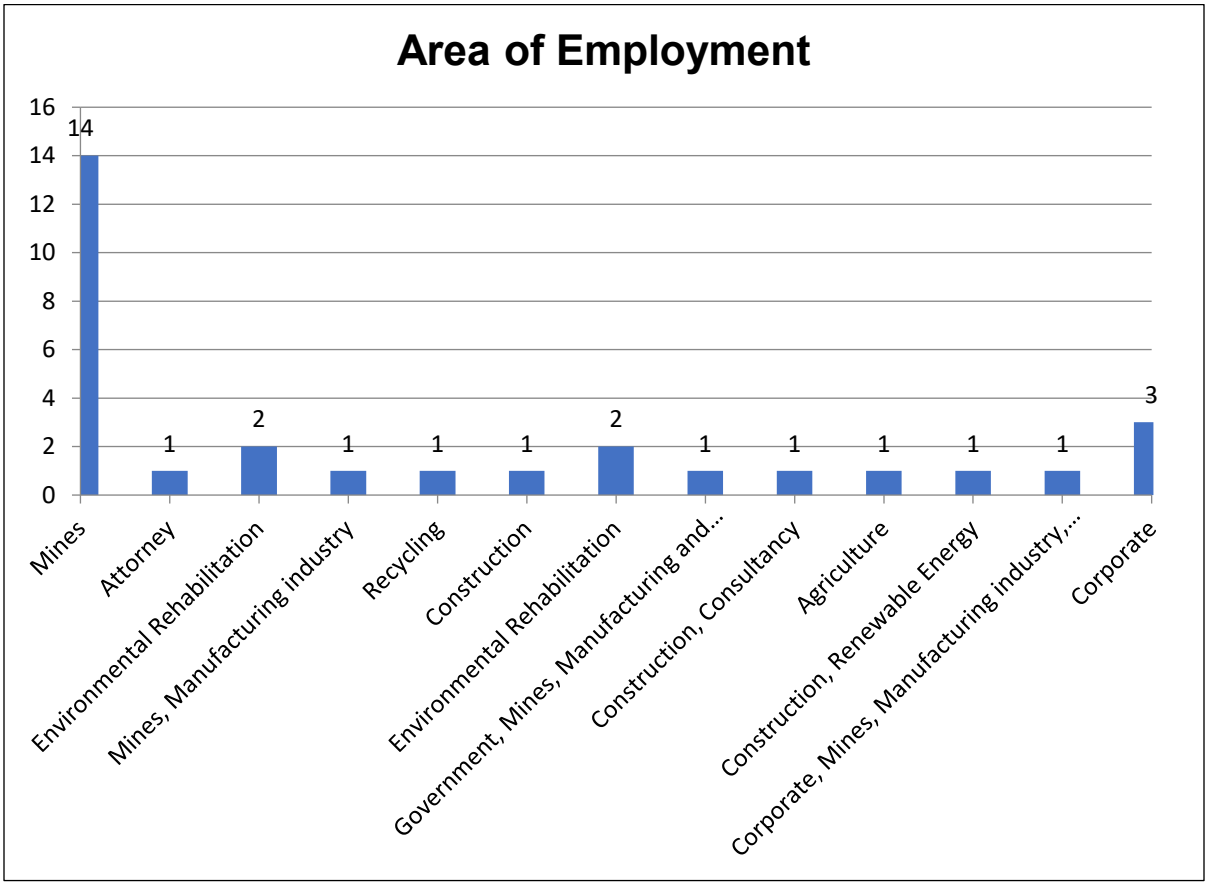


Figure 4: Which of the following best describe where you work

It can be deduced that the respondents are suitably distributed within the mining industry and in the various disciplines of the industry as it includes technical, legal, environmental, engineering, and commercial positions.

7.3 Section 2: The importance of sustainability in the organisations

This section explores sustainable management practices used in the various organisations. It will not follow the numerical order of the questionnaire, but the questions will be grouped into selected topics.

7.3.1 The importance of sustainability

Questions 6-10, 27 & 29 investigated the importance of sustainability in the test-group as perceived by the respondents. Question 6 (Question 1 of Section 2, refer Annexure3) explored the respondents' manager's response to sustainable development. Of note is that 97% of the respondents indicated that their managers support sustainable development. However, the response on Question 7, on how seriously sustainable development is taken at the highest level of management, indicated that 14% of the respondents feel that senior management does not take it seriously. Thirteen respondents (43%) indicated that senior management take it seriously and 43% also indicated that they take it very seriously.

Question 8 investigated the knowledge of the respondents with regards to their environmental policy, and 13% of the respondents indicated that they do not know their organisations' environmental policy while the rest, 87% indicate that they know it. Question 9 asked if sustainability is embedded throughout the organisation and 60% replied in the affirmative. With regards to question 10, which asked whether sustainability features in the agenda settings of meetings, 71% of the respondents indicated that sustainability does feature in agenda setting.

Question 27 investigated if biodiversity management is an emerging or well-established discipline in the organisation. As illustrated in Figure 5 below, 33% of the respondents indicated that biodiversity management is well established and 43% indicated that it is an emerging field while 24% indicated that it is non-existent.

Question 29 was posed to determine if respondents are comfortable to discuss the topic of environmental off-set areas (refer Chapter 2.5) and 40% answered in the affirmative. The interpretation of the response to this question is depicted in figure 16.

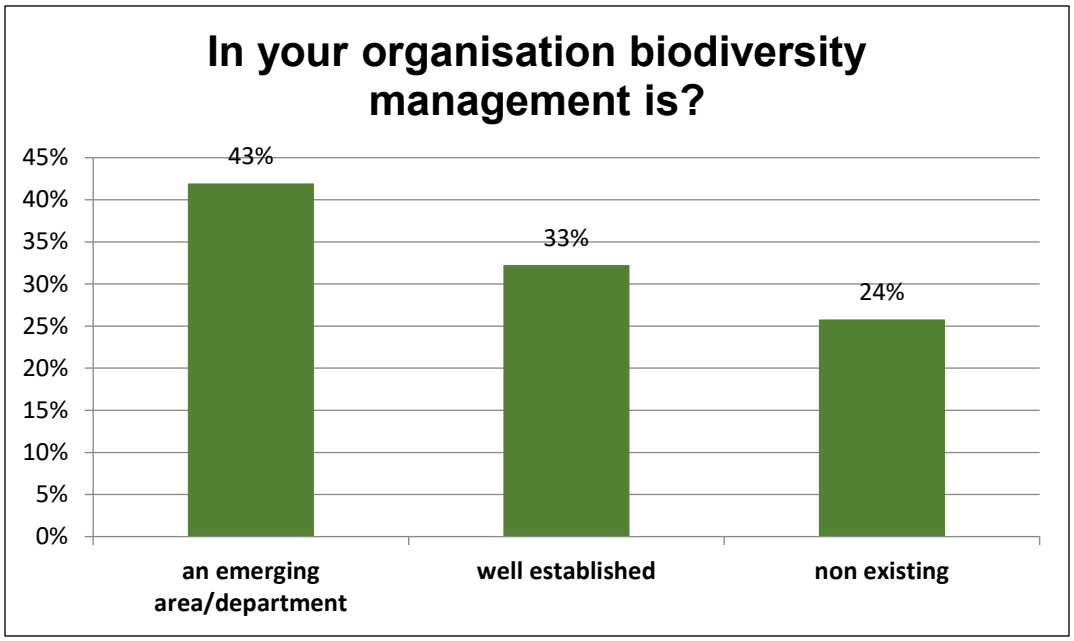


Figure 5: The status of biodiversity management

7.3.2 The structure of sustainability in organisations

Questions 13-15, 24 and 25 explored the composition and position of sustainable management in the organisation. This is important to assist in determining the organisation's commitment to sustainable development. Question 13 explored the level of seniority of the head of the sustainability team. Forty three percent (43%) of the respondents indicated that the head of the sustainability team is part of the executive management. Forty percent (40%) is part of senior management, 10% is in middle management and 7% is in junior managerial positions. Figure 6 below depicts the level of seniority as indicated by the respondents.

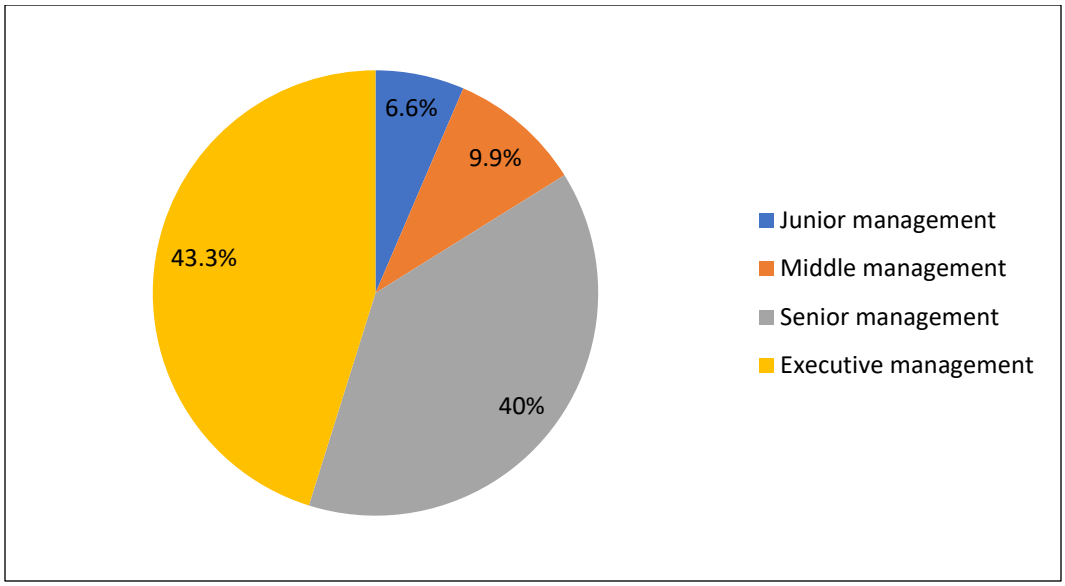


Figure 6: The level of seniority of the head of the Sustainability Team

Question 14 asked about the amount of staff members employed in the various organisations working exclusively on sustainability. The breakdown of the teams is depicted in Figure 7 below.

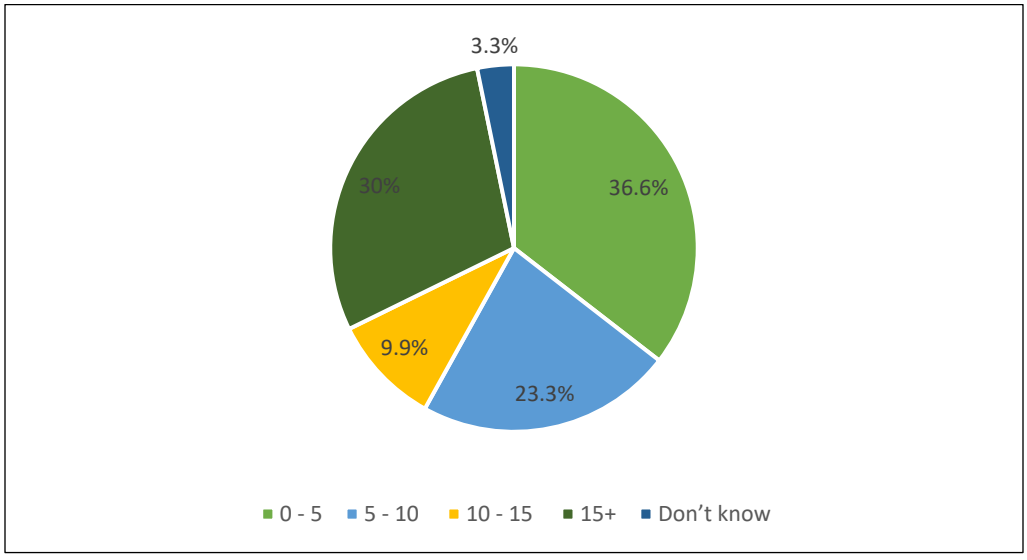


Figure 7: The average amount of staff members employed to work exclusively on sustainability

It was found that the sustainability team is remarkably small considering the task and responsibilities allocated to them. The majority, 35.48%, indicated that the sustainability team consists of 1-5 members.

Question 15 looked at whether sustainability teams make use of external assistance to assist or advise them with sustainability management and the majority of the respondents (50%) replied in the affirmative while 17% do not know or would rather not say. Figure 8 reflects the extent of external assistance in organisations.

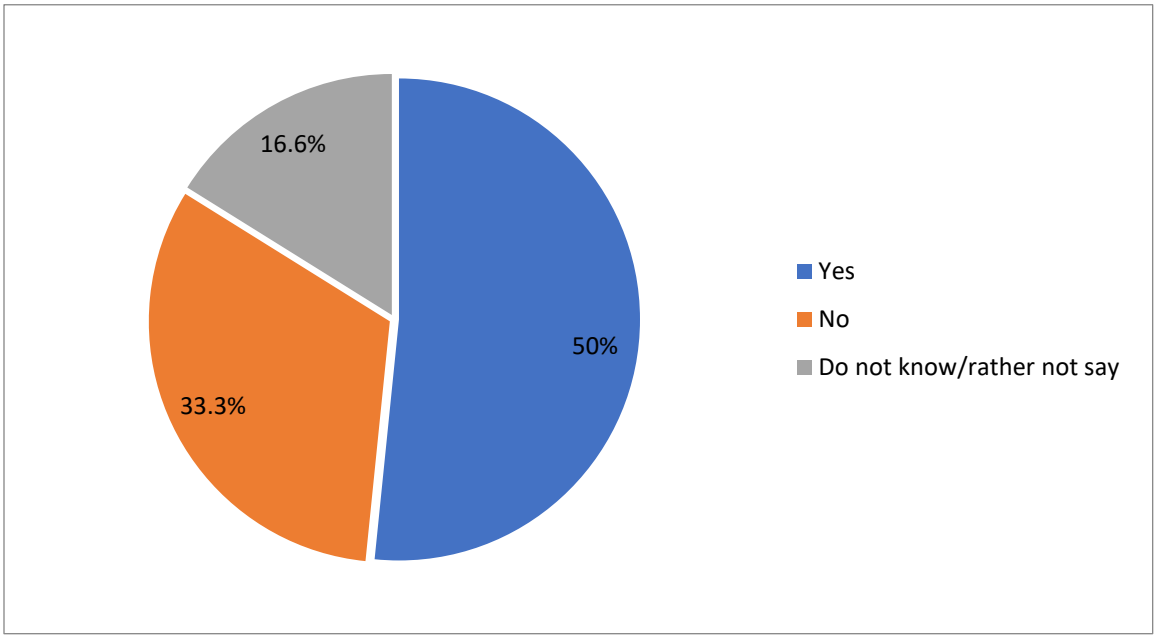


Figure 8: The state of external sustainability assistance in organisations

Question 19 relates to the structure of sustainability in the various organisations and investigates the office or position which ultimately takes responsibility for sustainable development in the organisation. Of significance is that 40% of the respondents (*n*=30) indicated that the Safety, Health and Environmental Manager is ultimately responsible, while 13.3% and 3.3% of respondents respectively indicated that the Sustainability Manager or the Environmental Manager was responsible. All three of the aforementioned managerial positions are related. Twelve respondents or 40% indicated that the CEO or Directors are responsible and one (3.3%) indicated that Corporate Affairs are responsible.

Question 25 investigated the person to whom the head of sustainability ultimately reports. Eighteen respondents (60%) (*n*=30) indicated that the Heads of Sustainability report to the General Manager, CEO, MD, Vice President of Corporate Affairs or a Senior Partner. 26.6% indicated that the head of sustainability reports to senior management on site, while 9.9% indicated that they report to the Safety Health and Environmental Manager, which is also a senior manager, on site. 3.3% of the respondents were not sure.

7.3.3 Cost of sustainability management

This section explores the response to Questions 11, 12, 31 and 32 as these questions are related to how much money organisations are prepared to spend on sustainability.

On the question if enough financial resources are allocated to sustainability in the organisation (Question 11), 46.66% of the respondents replied in the affirmative, 40% in the negative and 13.33% don't know or would rather not say.

However, when asked in Question 12 if the sustainability budget would increase the next financial year in accordance with the budgetary increases in the rest of the company, 40% replied in the affirmative while 33.33% indicated that they do not expect their budget to increase. A large proportion, 26.66%, responded that they do not know or would rather not say. The respondents' views on Questions 11 and 12 are represented in Figure 9 below.

Question 31 refers to a green economy which could be defined as an economy that improves human wellbeing and social equity while at the same time reduces environmental risks and ecological scarcities. This question was asked if such an economy is economically feasible. The respondents were clear on the issue with 77% saying that it is economically feasible, 7% saying that it is not and 17% of the respondents stating that they do not have an opinion in this regard.

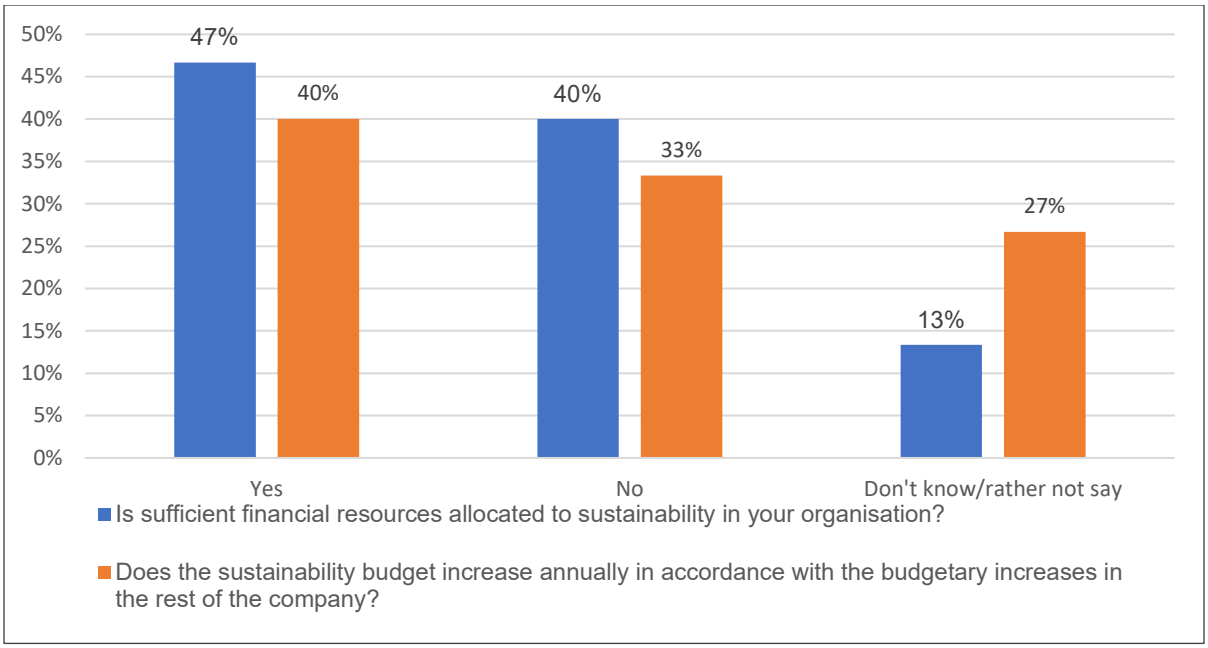


Figure 9: Financial allocation to the Sustainability Department and interpretation of monetary benefits of sustainable development

Question 32 states that there is a "close correlation" between economic growth and environmental degradation which also comes with a cost, and then asks the question if it is morally wrong to be depleting the earth's resources faster than they can be replenished. An overwhelming majority of 93% of respondents agree that it is morally wrong, while 3% do not agree and 3% do not have an opinion in this regard. Figure 10 below depicts the correspondents' view on question 31 and 32. The response shows that the respondents are morally conscious regarding the earth's limited resources.

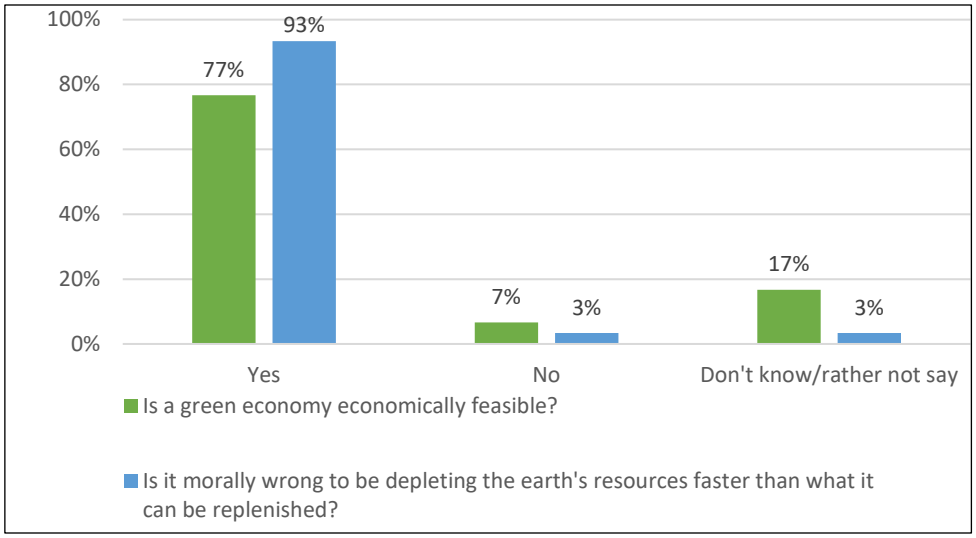


Figure 10: Respondents' environmental ethical approach

7.3.4 Commitment to sustainability:

This section explores Questions 16 to 18, 20, 21, 30, 33 and 36 and looks at the ethical issues with regards to the implementation of published commitment in policies and annual reports. Commitment to sustainability on paper is a starting point. Setting up a sustainability team and some form of monitoring, accompanied by appropriate reporting lines, is a further development. The topic to investigate in this section is to what extent, and how, are organisations operationalising sustainability and building it into their core business models.

Question 16 looks at where the emphasis of the sustainability team's responsibility is and asks the respondents to rate, on a scale of 1-5 where 1 is strongly disagree, 2 is disagree, 3 is neutral, 4 is agree, and 5 is strongly agree, the core part of the sustainability team's responsibility. Five responsibilities were identified: executing sustainability strategy, sustainability training & mentoring, sustainability auditing, sustainability monitoring and sustainability legal compliance.

Most of the respondents, a mean ($\bar{x}$) of 4.25, indicated that legal compliance is the core part of the sustainability team's functions. Sustainability strategy planning is rated fourth, and environmental monitoring, which guides the organisation and draws attention to

possible negative impacts, is rated third, behind auditing. The respondents' views in this regard are depicted in Figure 11 below.

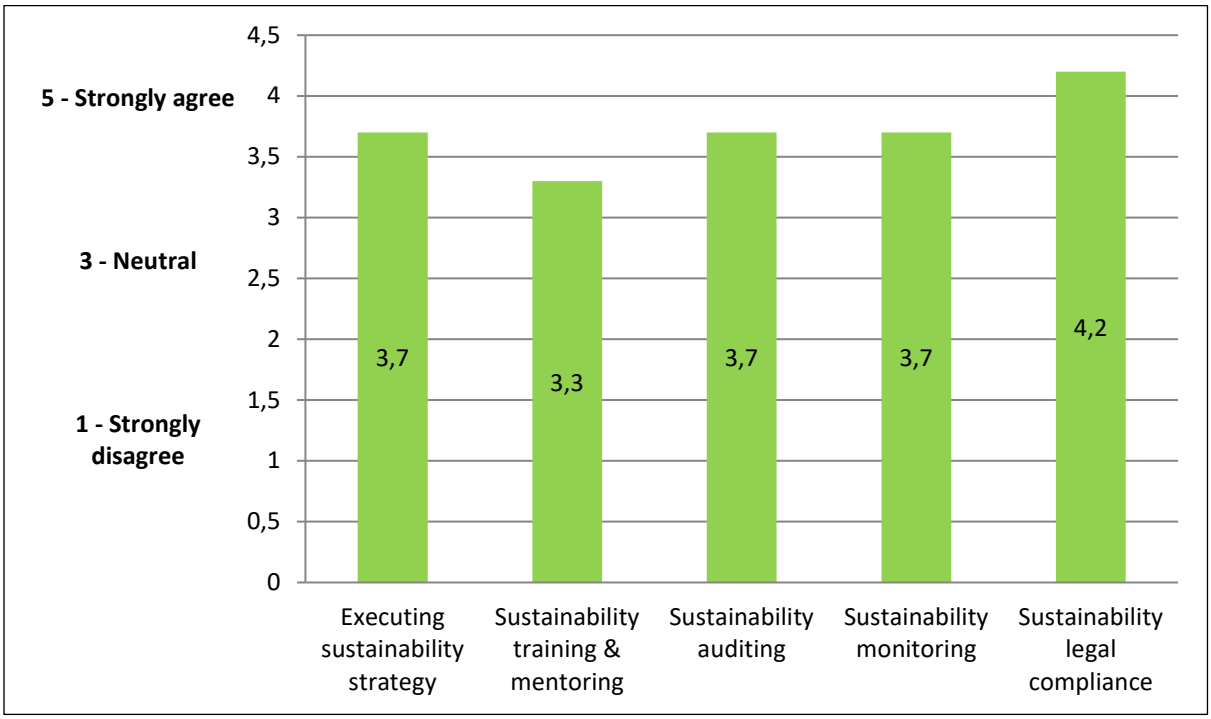


Figure 11: The core part of the Sustainability Team's responsibility

The sustainability strategy has an impact on most departments of an organisation. In response to Question 17, which asked which department the sustainability strategy directly impacts, 33.33% of the respondents indicated operations. Finance was indicated by 20.83% of the respondents and Supply Chain by 19.44% of the respondents. Figure 12 below gives the full breakdown of responses to this question.

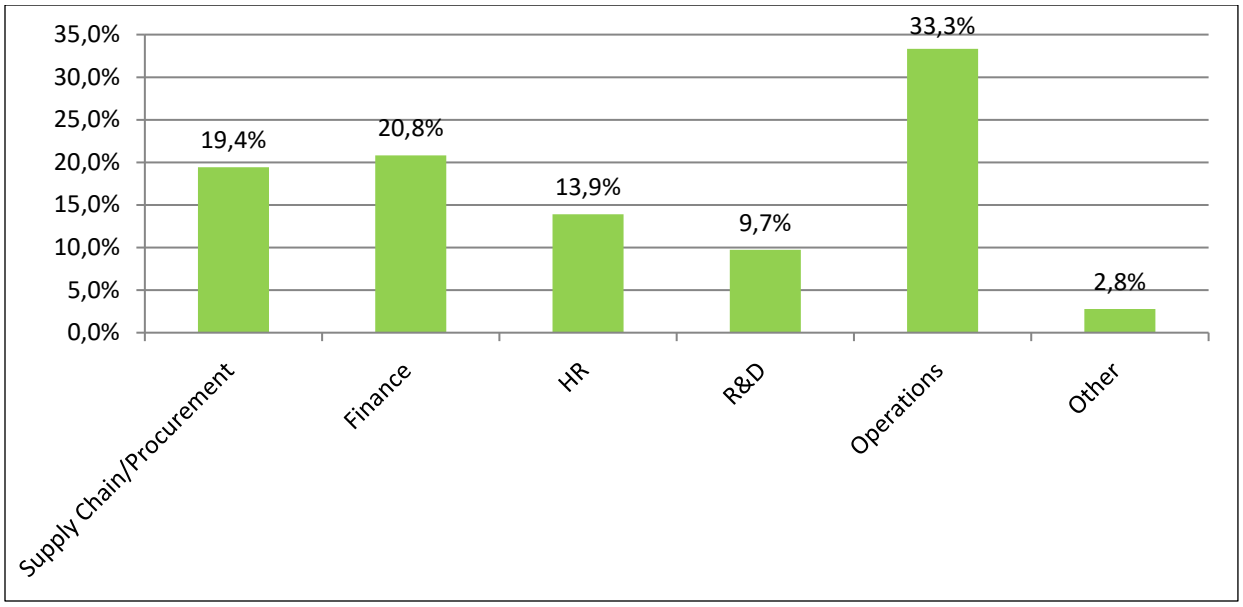


Figure 12: Departments the sustainability strategy directly impacts upon

Question 18 asked the respondents to rate how important sustainability is in the areas of employee engagement, product development, engaging stakeholder groups, securing sustainable supply chains, reputation preservation and impact response. A Likert scale of 1 to 4 was used, where 1 is not important; 2, somewhat important; 3 important and 4, very important.

Most of the respondents, a mean ($\bar{x}$) of 3.58, view reputation preservation as the most important area, followed by engaging stakeholder groups, which is a legal requirement. Securing sustainable supply chains is rated fifth, and employee engagement is rated the lowest. The respondents' views are captured in Figure 13 below.

The respondents were also asked in Question 20 if they feel comfortable that their various companies are accurately measuring the impact of their sustainability activities and in response 60% of the respondents answered in the affirmative. The respondents' views are captured in Figure 14 below.

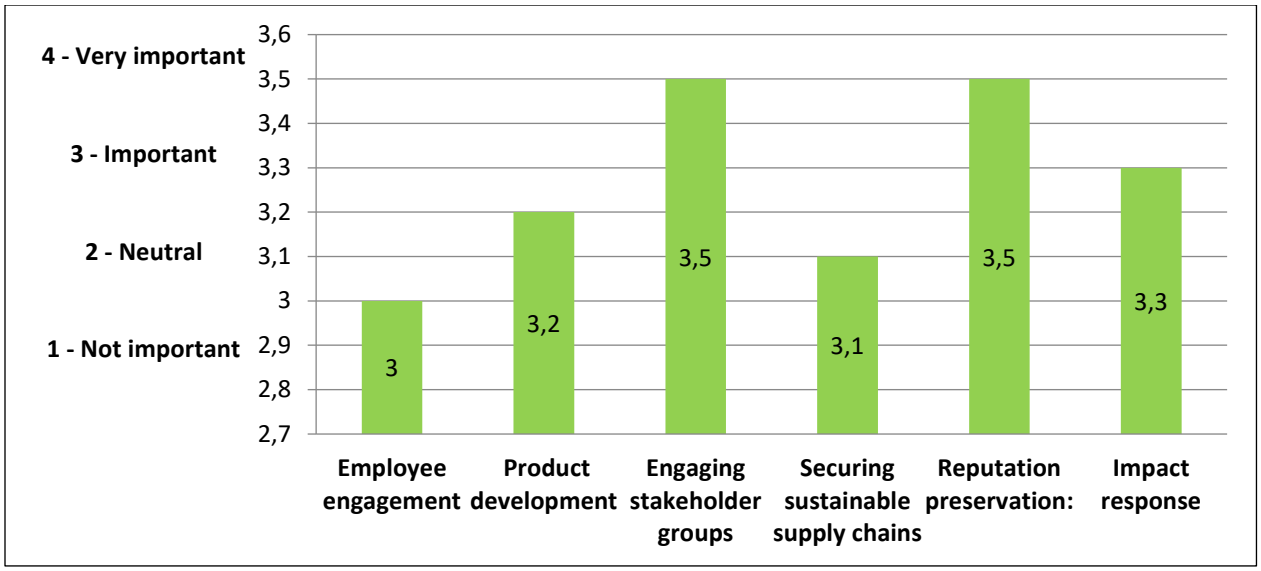


Figure 13: The importance of sustainability in various areas

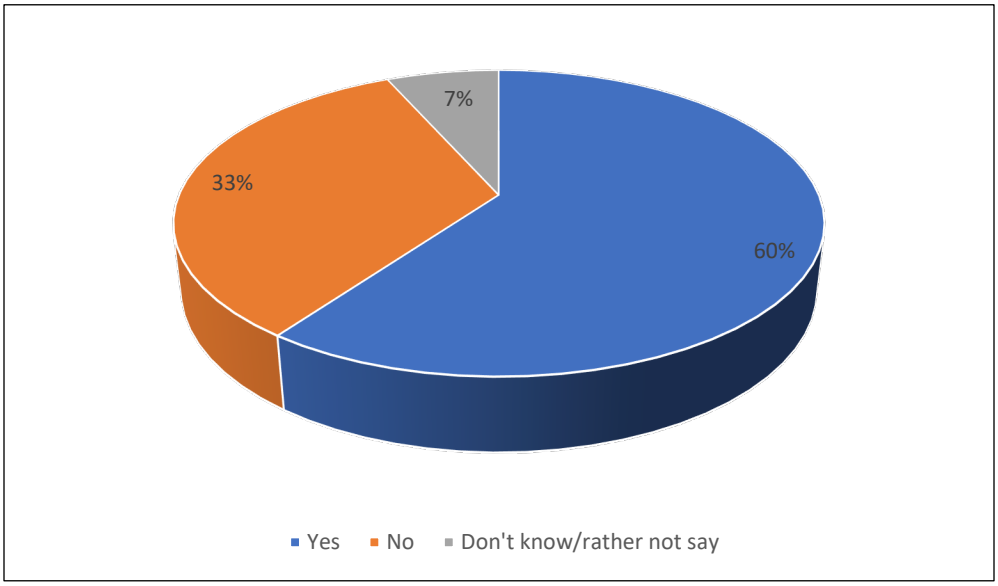


Figure 14: The impact of sustainability activity

Question 21 aimed to measure the involvement of the organisation with the neighbouring community to society at large. The respondents were asked if their organisations have engagement strategies with a range of groups. In all cases the respondents indicated that they have, from 20% indicating engagement with organs of government to 3.3% having a strategy for engagement with academic communities. The respondents' response in this regard is depicted in Figure 15 below.

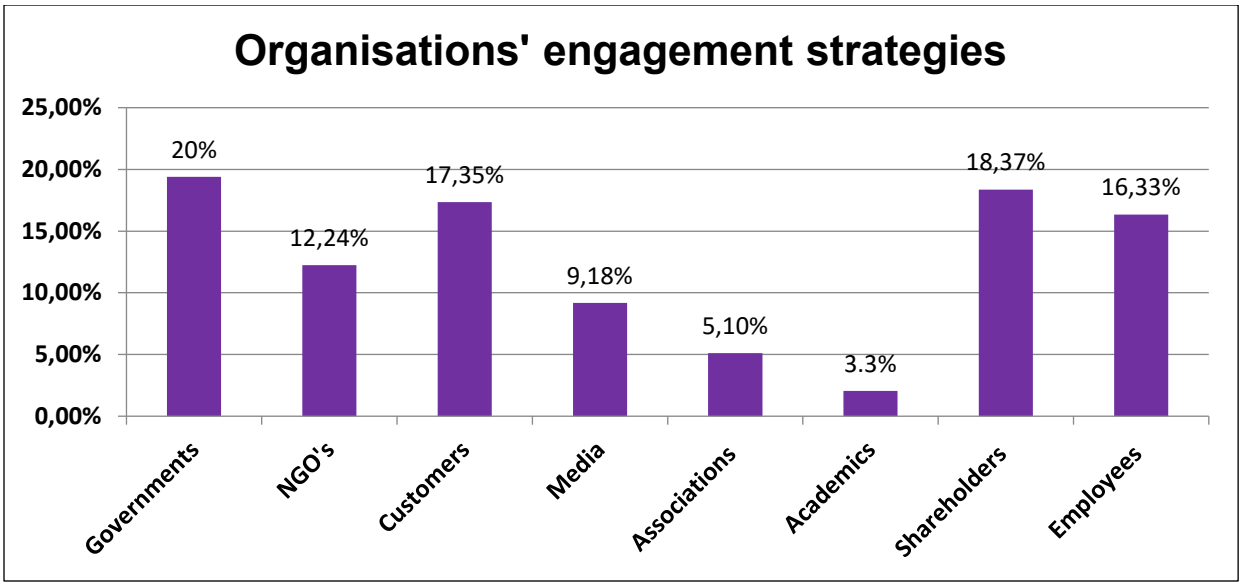


Figure 15: Does your organisation have an active/planned sustainability engagement strategy for the following groups?

As the target group for this study were mostly senior employees with post Grade 12 qualifications, it was also important to determine the respondents' knowledge in the field of environmental offset areas. Two questions were posed in this regard. Question 29 (refer 7.3.1) was to determine if the respondents are well enough versed to discuss the topic of environmental offset areas with their colleagues, and 37% answered in the affirmative. Question 30 was asked to determine if the respondents would promote the concept of environmental offset areas and 86.66% indicated they would, three respondents (10%) had no comments and one indicated that: "this is just moving the problem". The result of Question 29 and 30 are depicted in Figure 16 below.

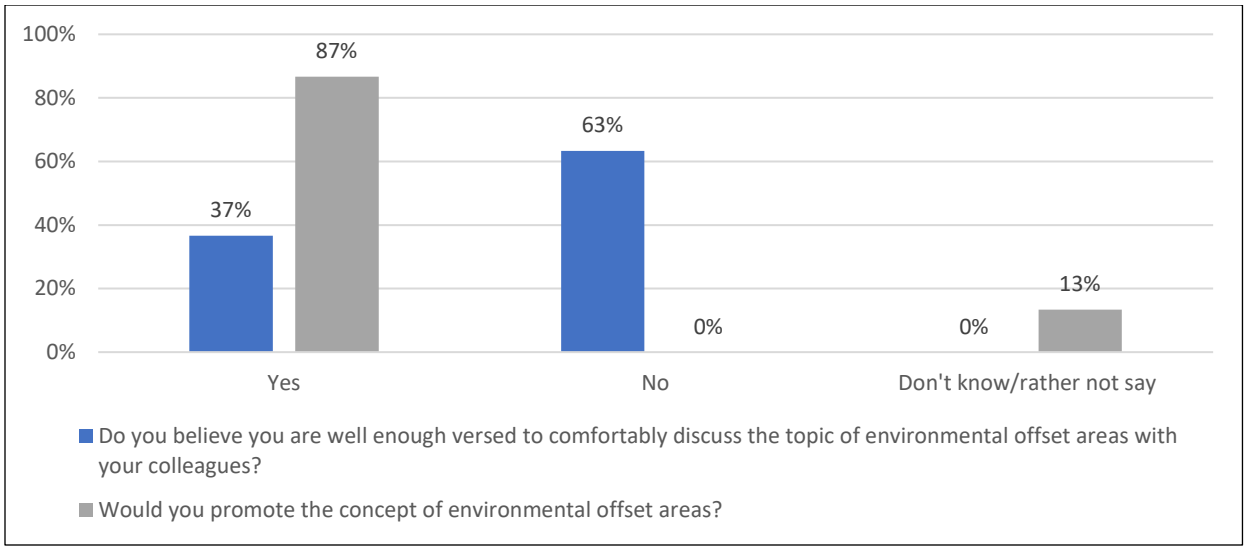


Figure 16: Respondents' views on environmental offset areas

Question 33 asked the question as to whether it is morally wrong to deplete the earth's natural resources faster than it could regenerate itself. Most of the respondents, 77%, indicated that it is wrong while 3% do not think so and 20% indicated that they do not know. Question 33 is also closely related to question 34 which relates to recycling in the organisation. Figure 17 below depicts the response to question 33.

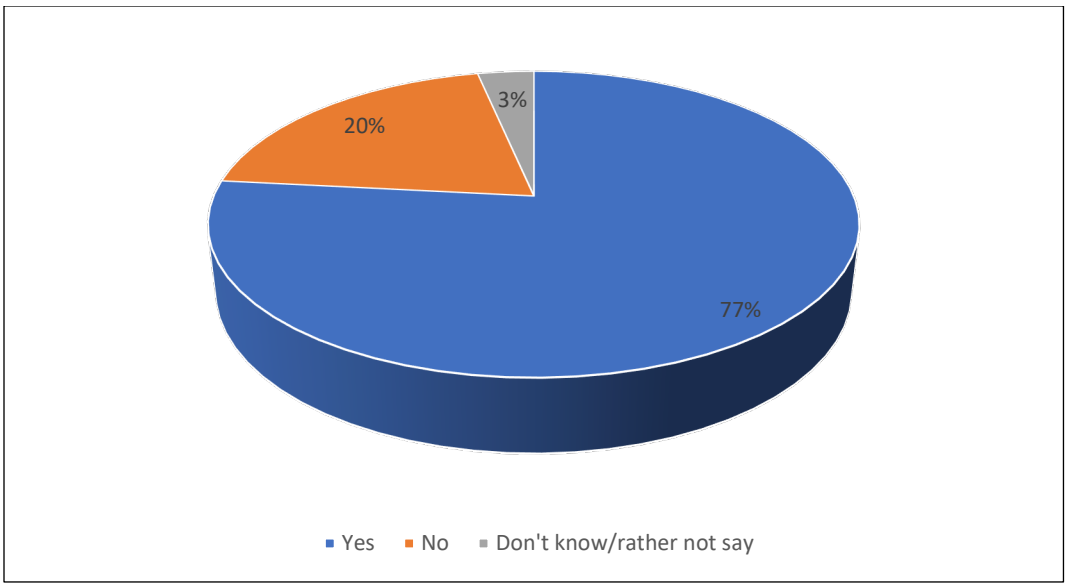


Figure 17: Is it morally wrong to deplete the earth's natural resources?

Question 36 asked the question if the respondents believe their organisations to have an ethical approach to sustainability management and 37% (*n*=30) replied in the affirmative. Sixty three percent (63%) believe their organisations do not have an ethical approach to sustainable development.

7.3.5 Returns on sustainability investments

Question 19 and 34 investigated the return on investment of sustainability initiatives. Question 19 asks the pertinent question if sustainable development leads to savings in the business and 50% respondents replied in the affirmative while 13% replied in the negative. More than a third, 37% do not know. Figure 18 gives a breakdown of respondents' responses in this regard.

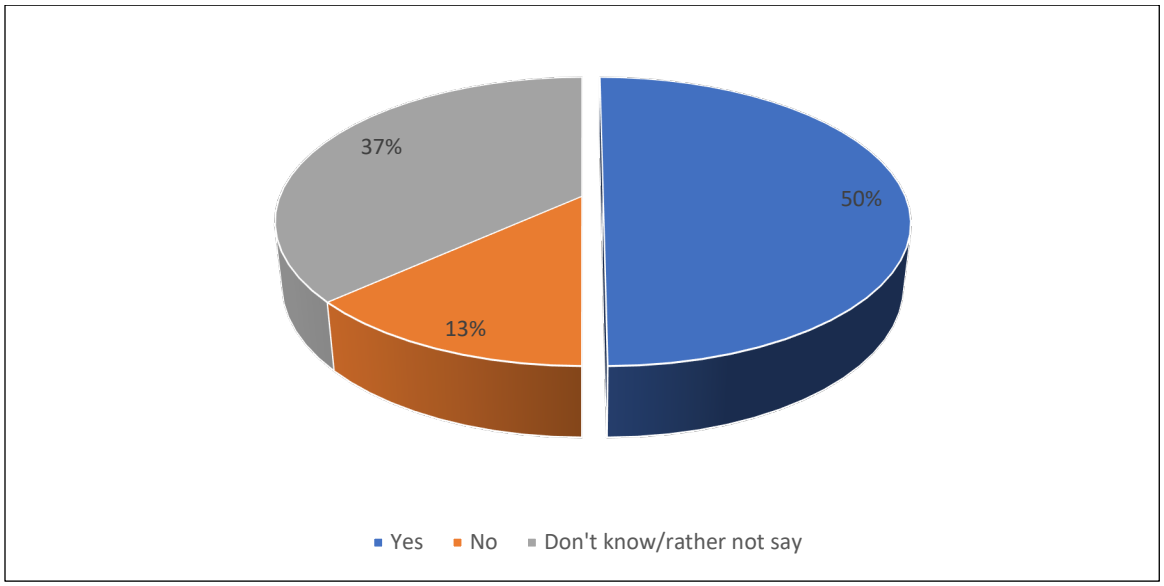


Figure 18: Does sustainable development lead to savings for your business?

Question 34 was asked to determine if the respondent's organisations promote recycling and 77% replied in the affirmative, 20% of the respondents' organisations do not promote recycling and 3% do not know. This question also relates to question 33 discussed above.

7.3.6 Pro-active engagement and sustainable development

Questions 22, 23, 28 and 35 will be discussed in this section and is set up to determine the organisation's internal and external engagement with interested and affected parties. Question 22 asked of the respondents to indicate the area that holds the single most exciting opportunity for the organisation in 2017. The following areas were listed; sustainable innovation such as green energy, beyond legal compliance to best international practice, reduced water-use target (resource savings), embedding a sustainable culture at work and at home or, other opportunities.

Some interesting support for the assumption that companies could do more to engage with the full range of their stakeholders on sustainability is provided by a finding that only 18.75% of the respondents consider embedding a sustainable culture to be the most exciting opportunity for them. The response to Question 22 is depicted in Figure 19 below.

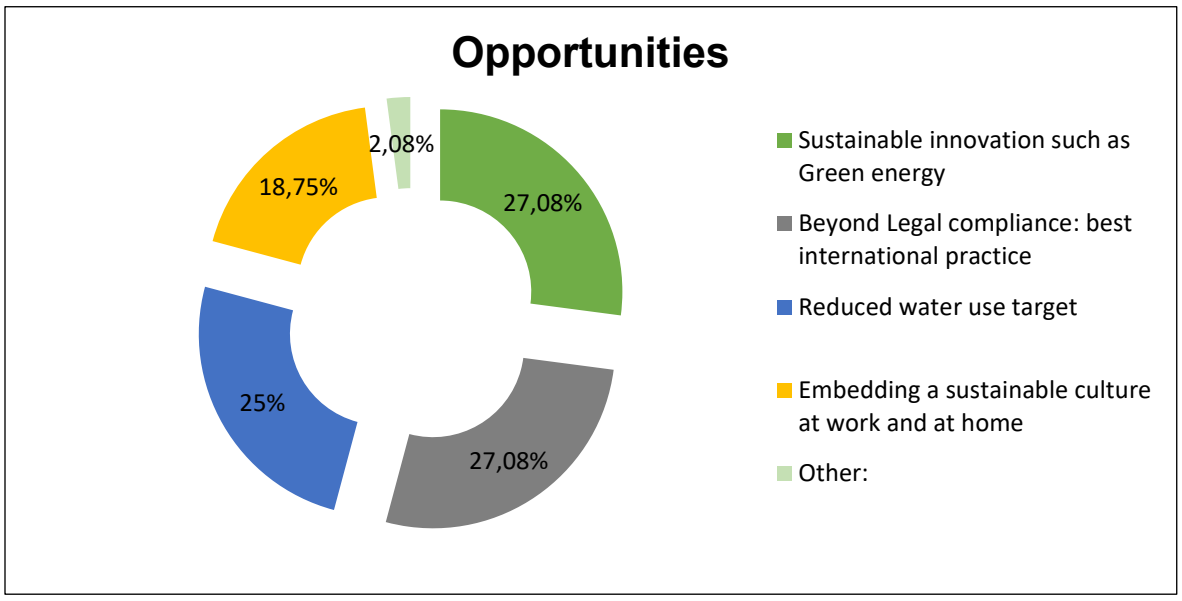


Figure 19: Which one area holds the single most exciting opportunity for your organisation in 2017?

Question 23 asked of the respondents to rate on a scale of 1 – 4 which of the following environmental activities were most important for the organisation where 1 is not important; 2 is somewhat important; 3 is important and 4 is very important:

i. Environmental Impact Assessment
ii. Creating a culture of sustainability
iii. Community support programmes
iv. Minimising water use
v. Waste management
vi. Engaging NGOs and multi stake holder groups
vii. Communicating success in sustainable projects
viii. Identifying and eliminating sustainability risks
ix. Carbon footprint reduction
x. Legal compliance
xi. Increased sustainability transparency
xii. Current and historical impacts for remediation.

The outcome of the response is depicted in figure 20 below.

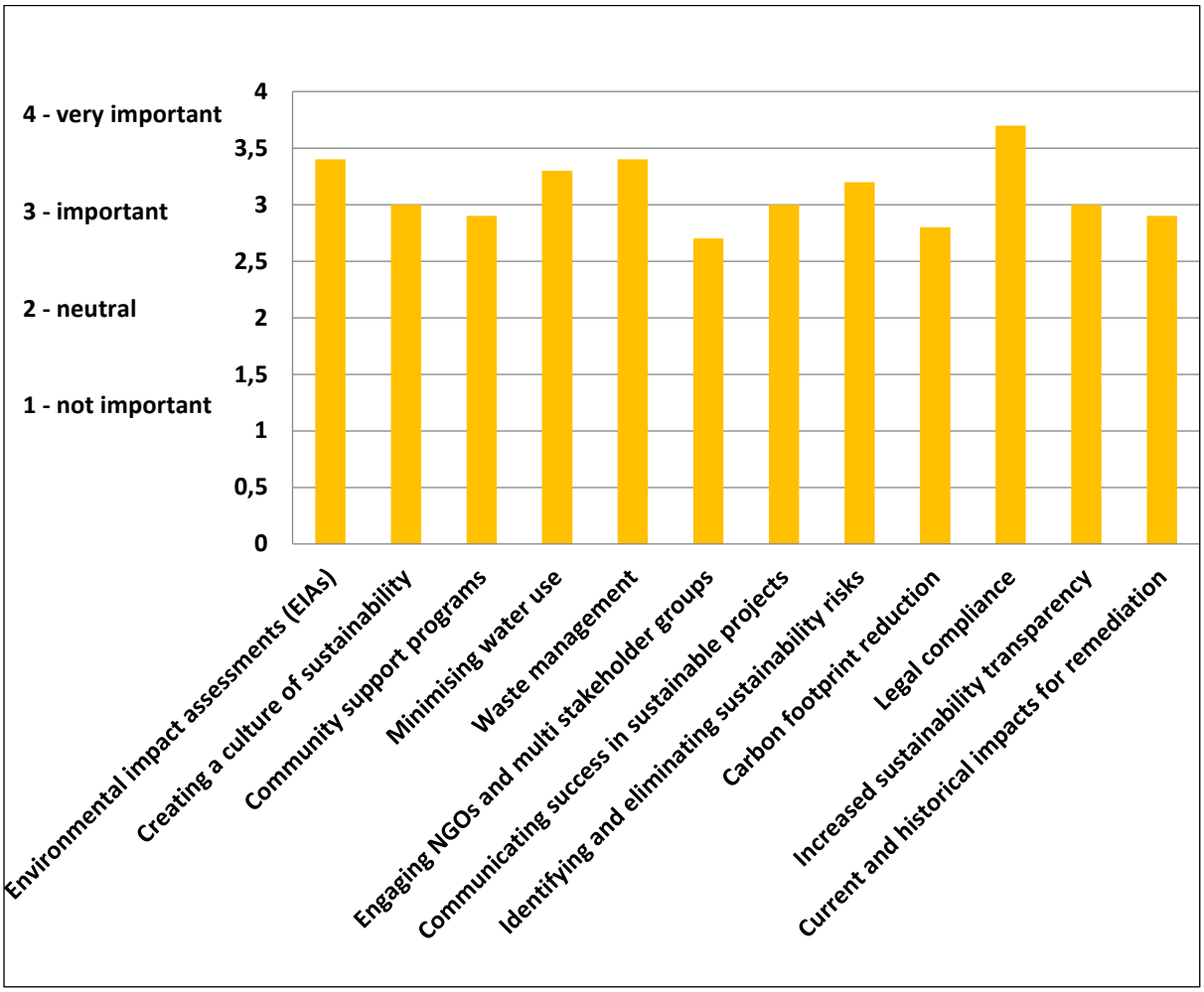


Figure 20: The importance of various environmental activities

The respondents rated “legal compliance” most highly followed by “waste management” and “environmental assessments”. These issues are all related to legal requirements. “Creating a culture of sustainability” was only rated as the fifth important activity.

Question 28 investigated the empowering of employees to develop new skills with regards to biodiversity and sustainability through activities such as internal and external courses or information sharing in meetings. Fifty-seven percent (57%) of the respondents indicated that they do not enjoy such liberties in their organisations. Thirty-seven percent (37%) said that they do not know and 11% get the opportunity to empower themselves with regards to biodiversity and sustainability through information sharing in meetings. The graphic portrayal of the respondents’ response is depicted in Figure 21 below.

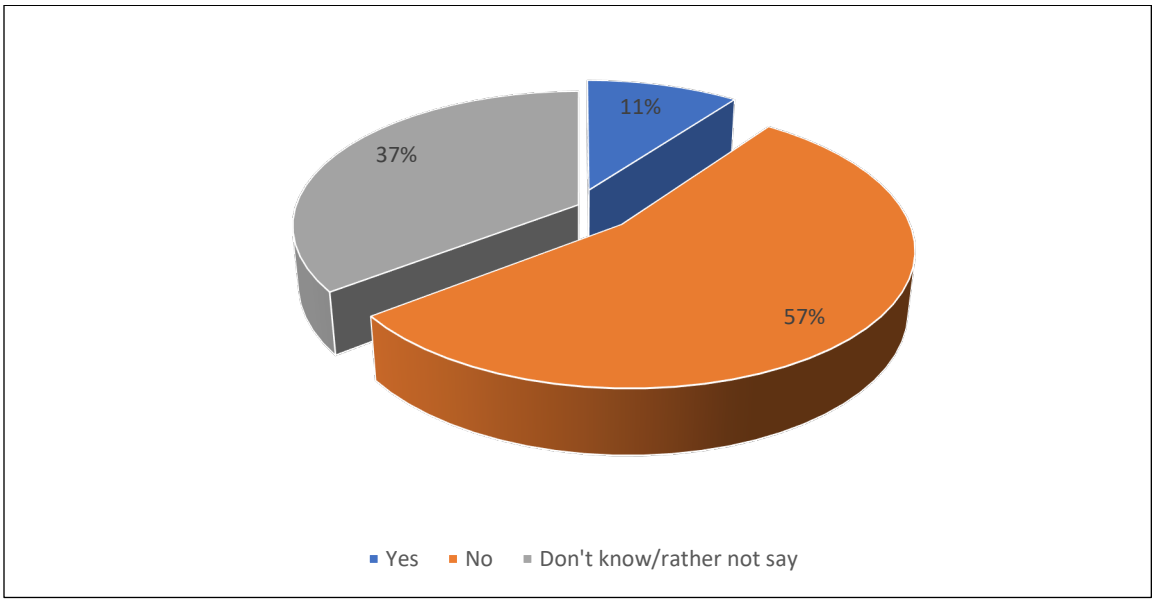


Figure 21: The empowering of employees to develop new skills in the field of sustainability

Question 35 investigated pro-active engagement by asking if the respondents believe sustainability has environmental, economic, and social dimensions and 100% (*n*=30) answered in the affirmative.

7.3.7 Sustainability challenges experienced by the respondents

Question 26 asked the respondents to state the two most prominent challenges regarding sustainable management they experience in executing your job. This question was posed to determine the support employees enjoy from their employers with sustainability matters.

A third (33.3%) of the respondents indicated in their comments a lack of funds to execute their environmental responsibilities. Three respondents (10%) indicated that environmental legislation is a challenge. Waste management was indicated by 6.75% of the respondents as one of the major challenges. One respondent responded that dealing with environmental practitioners from government with no integrity was a challenge. Another respondent indicated that his company is not focused on sustainable practices such as recycling. One respondent each indicated water use management and environmental protection as major concerns.

7.4 Summary

This chapter has presented a statistical analysis of the quantitative data collected. The structure of the chapter was based on the layout of the two sections of the questionnaire (refer Annexure 3) and as per the grouping of the questions in selected topics. The statistics obtained from the analysis will be used in discussion in Chapter 8.

A summary of the results from this chapter are that the total population group for this study was (n=30). No differentiation was made between male and female respondents and age was not a factor. It was determined that 50% of the respondents had post-graduate qualifications and 3.3% held a PhD. Sixty-three percent (63%) of the respondents have been in their current positions for more than 3 years and 80% are in middle to senior management level while 10% are in executive positions. Sixty percent (60%) of the respondents work on mines and 40% at corporate head office or related.

The second part of the questionnaire consisted of 32 questions and was set up to determine the approach to sustainable development of the organisation. The data

collected indicated that the respondents thought about the questions and gave thoughtful answers and valuable comments. This will be discussed in detail in the following chapter.

CHAPTER 8: RESEARCH FINDINGS

8.1 Introduction

In the previous chapter, the results obtained from the questionnaire were provided and briefly discussed. The focus of this chapter is to provide an in-depth interpretation of the results. The conclusion of this research study will be formulated in accordance with the research objectives set out in Chapter 1. The limitations associated with the research study will also be provided. This will be followed by recommendations for future research studies.

Kothari (2004:344) points out that after collecting and analysing the data, the researcher must draw inferences followed by his report. To prevent the research being invalid, the data analyses must be performed carefully and objectively to avoid misleading conclusions. Interpretation allows the researcher and others to understand the significance of the research findings.

8.2 Objectives of the research study

The aim of the research is to explore if corporate codes of environmental conduct contribute to sustainable development in the mining sector by addressing the following objectives as set out in Chapter 1.

i. To investigate if there are specific approaches towards the environment apparent in the approach of organisations to corporate social responsibility.
ii. To determine if approaches to corporate social responsibility take an anthropocentric, ecocentric, or balanced approach to environmental care.
iii. To investigate if corporate mitigation measures are adopted because of moral motivations or legal requirements.
iv. To determine the environmental ethical approach of employees and,
v. To determine if employees are sufficiently informed to make environmentally sustainable decisions.

This chapter concludes the survey and is my interpretation of the results on the questions posed.

8.3 Interpretation and discussion of the results

The results will not be discussed in a numerical order but grouped in accordance with seven selected topics as discussed in Chapter 7. The additional comments from question 36 will be discussed under the applicable topic.

8.3.1 Topic 1: The importance of sustainability in the organisations

Question 6-10, 27 and 29 investigated the importance of sustainability in the organisation as perceived by the respondents (Refer 9.3.2). Most of the respondents (97%) indicated that their managers support sustainable development. However, in response to the following question on how seriously sustainable development is taken at the highest level of management, 16% of the respondents indicated that senior management do not take it seriously. It could be concluded that, although there is overwhelming support for sustainable development, a percentage of senior management do not feel that sustainability is important.

Knowledge of the organisation's environmental policy is embedded in the majority (87%) of the respondents while the balance (13%) does not know their organisations' environmental policy. This could also imply that the organisation does not have such a policy. Even though the environmental policy is entrenched in most of the respondents (87%), only 60% indicated that sustainability is embedded throughout the organisation. Most of the respondents (71%) also indicated that sustainability features in the agenda settings of meetings. It could thus be broadly stated that the term sustainability is entrenched in the organisations investigated.

The human species has a long history of dependence on biological resources (Singh 2006:224 and Sodikoff 2012:4) Through ignorance, carelessness, or greed, humankind has reduced biological abundance and driven many species into extinction. The scale of human impact on global biodiversity has been documented in Chapter 2. This impact

requires debate about the moral relationships between humans, industry and authorities and nonhuman species and habitats. As the target group for this study were senior employees with post senior certificate qualifications, it was also important to determine the respondents' interpretation of the concept of environment/biodiversity and offset areas, pertinent topics in the mining industry. Two questions in this regard were posed in this section. Biodiversity management is clearly still an emerging discipline in the organisation as only 32% of the respondents indicated that it is well established, 42% that it is an emerging field and 26% that it is non-existent. On the question if the respondents can comfortably discuss the topic of environmental offset areas with their colleagues, a minority of 38.7% answered in the affirmative. These results indicate that a significant proportion of senior management surveyed does not adequately recognise the importance of biodiversity, extinction, or biodiversity conservation.

From the response to the questionnaire it is evident that the respondents are well versed with the term "sustainability" or "sustainable development" and are also aware of the value of sustainability but doubt those who must execute sustainability. This is supported with comments such as: "… the most important point of the company's existence is placed on covering the cost to operate" and, "Company undergone restructuring process. At present the legal compliance and executing sustainable expectations have not been supported - employee knowledge on sustainability and the actual impact on the immediate and future economies, natural environment, social community and generations have not been taken seriously". The respondents indicate that their organisations are aware of sustainability but less convinced of the value of sustainability, or less motivated to pursue it.

My experience in sustainability management is that the practice of sustainability in organisations has been through several evolutionary stages – from something done, sometimes begrudgingly, for public relations or regulatory purposes, to more recently where sustainability concerns and strategies have been elevated to board level. However, it is not clear if this is due to internal policy or external pressure.

8.3.2 Topic 2: The structure of sustainability in the organisations

The seriousness with which boardrooms treat sustainability is shown by the level of seniority of the head of the sustainability team where 43.8 % of the respondents indicated that the head of sustainability is part of the executive team, and 37.5% indicated that they are a part of senior management. This also indicates that most of the sustainability teams are involved in strategic decision-making.

Considering the current focus on sustainability, the sustainability team is remarkably small with 1-5 members. The extent to which sustainability teams make use of external assistance to assist and advise them with sustainability strategy, confirms this. Most of the respondents (51.61%), indicated that their organisation makes use of external assistance and 16% do not know or would rather not say. This could indicate under-staffing of the sustainability department and/or a lack of knowledge of sustainability issues within a company's sustainability department.

With regards to the office or position which ultimately takes responsibility for sustainable development in the organisation, 40% of the respondents indicated the Safety, Health and Environmental Manager. Thirteen percent (13%) indicated the Sustainability Manager and 3.3% the Environmental Manager as being ultimately responsible. All three of the managerial positions mentioned are related. Forty percent (40%) indicated that the CEO or Directors are responsible and 3.3% indicated that Corporate Affairs are responsible.

However, Section 34(7) of NEMA relates to criminal proceedings and stipulates that:

> [A]ny person who is or was a director of a firm at the time of the commission by that firm of an offence under any provision listed in Schedule 3, shall himself or herself be guilty of the said offence and liable on conviction to the penalty specified in the relevant law, if the offence in question resulted from the failure of the director to take all reasonable steps that were necessary under the circumstances to prevent the commission of the offence; provided that proof of the said offence by the firm shall constitute prima facie evidence that the director is guilty.

Section (8) states that “Any such manager, agent, employee or director may be so convicted and sentenced in addition to the employer of the firm”. This clearly indicates that the Chief Operating Officer (CEO) is ultimately responsible for sustainable development in his operation.

The heads of sustainability fill a very senior position in the organisations investigated and are responsible for sustainability planning and execution. However, the respondents pointed out that insufficient human resources are allocated to sustainable development. The seniority of the sustainability managers’ position can be interpreted as recognition of the importance of sustainability, but the understaffed sustainability department could point to the opposite.

In view of the seniority of the position of the sustainability manager it can be deduced that sustainability is slowly emerging from its silo and is becoming a vital aspect of strategic planning. However, there is considerable scope for more to be done and to leverage the potential of sustainability.

8.3.3 Topic 3: The cost of sustainability management in the organisation

A good criterion of how seriously organisations take sustainability is, of course, how much money they are prepared to spend on it. In response to the question if sufficient financial resources are allocated to sustainability in the organisation, 46.66% of the respondents replied in the affirmative, 40% in the negative and 13.33% do not know or would rather not say.

However, when asked in the following question if the sustainability budget would increase the next financial year in accordance with the budgetary increases in the rest of the company, 40% replied in the affirmative and 33.33% indicated that they do not expect their budget to increase. This could reflect continued economic uncertainty in the country, but it is important to note that the sustainability budget will be affected. A large proportion, 26.66%, responded that they do not know or would rather not say. Of note is that a third of respondents were not expecting a budget increase in accordance with the rest of the

company. What was not measured was if the increase expected in the sustainability budget was in line with inflation.

The most negative responses were also received with regards to the cost of sustainability management with responses such as: “Due to a lack of funding it is very difficult to comply (legal compliance) and get enthusiastic about sustainability at all times…”, “…the lack of funding is a headache” and “Budget constraints”.

Question 31 referred to a green economy as an economy that improves human wellbeing and social equity while at the same time reducing environmental risks and ecological scarcities and asked if such an economy is economically feasible. (OECD, 2011:9) The respondents (*n*=29) were clear on the issue with 79.31% saying that it is economically feasible, 6.9% saying that it is not and 13.79% of the respondents not expressing an opinion in this regard.

Recent research shows various opinions on the green economy, ranging from the opinion that “decoupling from resource use may be achieved on a global scale against a background of continued economic growth” to the view that “green growth is likely to be a misguided objective, and policymakers need to look toward alternative strategies” (Hickel & Kallis, 2020). Others argue that “new radical social policies can combine social prosperity and low-carbon emissions and are economically and politically feasible” (D’Alessandro *et al.,* 2020) or that it is possible but with limits to growth. They also point out constraints such as technology, policies, skills, and the knowledge of consumers as barriers to green economy development (Capasso *et al.*, 2019).

Question 32 states that there is a “close correlation” between economic growth and environmental degradation, which also bears a cost, and then asks the question if it is morally wrong to be depleting the earth's resources faster than they can be replenished. In this survey, an overwhelming majority (90%) agree that it is morally wrong to deplete resources faster than they can be replenished.

From the response, it is perceived that insufficient financial resources are allocated to sustainable development, despite the fact that the response to the questions posed with regards to the cost of sustainability management shows that the respondents are morally conscious with regards to the earth's limited resources.

8.3.4 Topic 4: Ethical questions with regards to published commitment in policy documents and reports.

One of the key issues which prompted my research, is the core part of the sustainability team's responsibility. Five responsibilities were identified: executing sustainability strategy, sustainability training & mentoring, sustainability auditing, sustainability monitoring and sustainability legal compliance. Most of the respondents, 53%, (a mean ($\underline{x}$) of 4.25) indicated legal compliance as the core part of the sustainability team's functions. This implies that most organisations are reactive in sustainability management. Sustainability strategy planning and execution, which guide the organisation's approach to sustainability, was rated fourth, and environmental monitoring which guides the organisation, and which will draw attention to possible negative impacts was rated third, behind environmental auditing.

The sustainability strategy has an impact on most departments of an organisation. In this study, a third of the respondents indicated that Operations were directly impacted. This once more points to a reactive response. At the operational phase, every sustainable requirement must be in place and sustainability should only be monitored. Operations should not be directly impacted. Approximately 21% indicated that finance was impacted, indicating that sustainability was interpreted as a negative cost with no return on investment. Only 10% indicated that Research and Development was affected. Supply Chain was also significantly impacted in 20% of the organisations. There is no doubt that it is in the Supply Chain that the greatest sustainability risks lie. This is the material/goods entrance and product exit point of the organisation which allows the best opportunity to raise standards and minimise environmental footprints.

My personal experience in the mining sector is that in the Supply Chain Department, sustainability is interpreted as a focus on local content to ensure business continuity through strategic relationships with SMMEs, local communities and local business. The purpose is to make a difference (a lasting impact) in the area in which they operate. It could be construed that the motivation is not environmentally, but socially, driven. The Supply Chain Department should be in the frontline as they do the purchasing and tender documents and should evaluate the product or contract's sustainability impact. Research and Development should also feature high on the priority list, because as with any innovation, there could be an environmental impact.

The following question was asked to rate the importance of sustainability in the following areas: employee engagement, product development, engaging stakeholder groups, securing sustainable supply chains, reputation preservation and impact response. Most of the respondents, a mean ($\underline{x}$) of 3.58, view reputation preservation as the most important area followed by engaging stakeholder groups, which is a legal requirement. Securing sustainable supply chains is rated fifth and employee engagement is rated the lowest. Ideally, employee engagement should have rated higher as informed employees will make better sustainability decisions. This is supported with comments such as: "Sustainability management is often regarded as a nice to have, which requires additional funds which in turn has a direct impact on profit margins. We need to promote a best practice which is not always more expensive".

Question 20 measured the response to the question as to whether companies measure the impact of its sustainability activities. Only 58% of the respondents answered in the affirmative. Measuring is the first line of a sustainability strategy. Measuring and monitoring will also indicate an early warning of a potential environmental impact.

As the target group for this study were mostly senior employees, it was also important to determine the respondents' knowledge in the field of environmental offset areas (refer Chapter 2.5). Two questions were posed in this regard. Question 29 (refer 8.4.1) was to determine if the respondents are well enough versed to discuss the topic of environmental

offset areas with their colleagues and question 30 to determine if the respondents would promote the concept of environmental offset areas. While only 38.7% indicated that they possess enough knowledge on the subject, 93% indicated that they would promote biodiversity offset areas. This indicates that, although there is a lack of knowledge, most respondents accept the importance of offset areas to preserve the environment.

The respondents were overwhelmingly positive with regards to their environmental ethical approach with 90% indicating that it is morally wrong to be depleting the earth's resources faster than they can be replenished (Question 32). On the question if they believe their organisation to have an ethical approach to sustainability management, 83% answered in the affirmative (Question 35). The response shows that the respondents are morally conscious with regards to the earth's limited resources.

In response to more than one question, legal compliance and reputation preservation was mentioned as the priority action for the sustainability department. This could suggest that the organisations are not legally compliant or that the goal is to stay legally compliant and not go beyond into ethically driven best practice.

From the responses it also became evident that sustainable practices such as measuring sustainability impacts, recycling, attending environmental workshops, being involved in environmental protection, and voluntary participation in community environmental concerns do not feature on the organisations' agendas. Comments such as: "Humans are locked into concepts of riches and greed that have disturbed the natural balance of life" could also point to the environmental degradation helplessly observed by one of the respondents. However, the response shows that the respondents are morally conscious with regards to the earth's limited resources.

8.3.5 Topic 5: The return on sustainability investments

Questions 19 and 34 investigated the return on investment of sustainability initiatives. Question 19 asks the pertinent question if sustainable development leads to savings in the business, and 50% of respondents replied in the affirmative, while 13.3% replied in

the negative. More than a third, 36.7%, do not know. The fact that so few respondents know could be an indication that companies do not measure the return on investment of sustainability or do not communicate it. Question 33 was asked to determine if the respondents' organisations promote recycling and 77% replied in the affirmative, 20% of the respondents indicate that their organisations do not promote recycling and 3% do not know. This question also relates to question 32 discussed in 8.4.4 above.

By selling the waste, recycling could generate an income for the company, save on space at the disposal site or could be a job creation opportunity. The fact that organisations are not participating in recycling initiatives, or promoting recycling to their employees, could be an indication that they are not aware of the benefits of recycling or that they do not perceive it as sustainable management.

8.3.6 Topic 6: Engagement with interested and affected parties

All the respondents indicated that their organisations do have engagement strategies within the organisation itself, the neighbouring community, and society at large. The majority (19.4%) indicated engagement with organs of government as a priority followed by stakeholders (18.4%) and customers (17.3%). Engagement with employees (16.3%). NGOs (12.2%) and the media (9.2%) followed by engagement with academic communities (2%) was rated the lowest. Employees are the organisations' most important voices and ideally should be engaged with more. The same applies with the engagement with the media which is perhaps essential in this age of social media when more negative than good news can spread almost instantly.

Question 22 investigated the single most exciting opportunity for the respondents' organisations in 2017. The responses imply that the organisation's priority is only to comply with legislation, as most of the respondents, (27%) indicated as such. Embedding a sustainable culture at work and at home was indicated by 18.75.% of the respondents as an opportunity for their respective organisations.

For most companies, “Legal Compliance”, then “Waste Management” and lastly “Environmental Assessments” were the most important environmental activities for the organisation. All three of these issues are linked to legal requirements. As the focus is on complying with legal obligations one could argue that this is the primary focus of these organisations. Once a culture of sustainability is created and top level buy in is secured only “Environmental Assessments”, to determine the organisations’ state of compliance, should feature. “Creating a culture of sustainability” was only the fifth most important activity. These findings could be an indication that organisations have not yet moved beyond the point of legal compliance to an ethical approach.

Most respondents (60%) indicated that they were not given the liberty to develop new skills in the field of sustainability in their organisation, while only 30% of respondents were able to develop new skills. This indicates a lack of strategic planning for the development of senior managers in the field of sustainability. All respondents believe sustainability has environmental, economic, and social dimensions, revealing some basic understanding or experience in sustainability.

There is a clear indication that the respondents’ employers engage with all the institutions listed in the questionnaire. However, government departments and stakeholders, who were not identified, top the list. It is also evident that embedding a sustainable culture in the organisation is not a priority.

Comments such as: “More training needed on this topic for all employees down to the lowest level” and “This is a difficult topic if you do not work in this field” suggests that environmental awareness and training is also low on the priority list.

8.3.7 Topic 7: The sustainability challenges experienced by employees

A third (33.3%) of the respondents indicated in their comments a lack of funds to execute their environmental responsibilities. Some of the respondents were expressive with regards to the cost to sustainability management and comments such as the following alluded to that:

i. “sustainability management is often regarded as a nice to have, which requires additional funds which in turn has a direct impact on profit-margins”.
ii. “we have well qualified individuals with years of experience within the organisation, but the lack of funding is a headache”.
iii. “due to a lack of funding it is very difficult to comply and get enthusiastic about sustainability at all times”.

Three respondents (10%) indicated that environmental legislation is a challenge. Waste management was indicated by 6.66% of the respondents as one of the major challenges. One respondent responded, “that having to deal with environmental practitioners (from the government) who lack integrity” is their biggest challenge. Another respondent indicated that “the company is not focused on sustainable practices such as recycling…”. One respondent each indicated water use management and environmental protection as major concerns.

Challenges experienced by employees with regards to sustainability management mainly allude to financial constraints, an array of legislation, and working with unscrupulous government officials.

8.4 Limitations to this research study

In this study the contribution that environmental codes of conduct make on sustainable development in the mining sector were determined. However certain limitations were encountered:

i. A convenient sample was used where only participants who had an active LinkedIn account and/or e-mail address could participant in the study. The study was explained to the HR Department who supplied the names and contact details of the respondents. As a result, some participants who did not have an active LinkedIn account and/or e-mail address were excluded from the sample size.
ii. Some resistance was experienced from some of the respondents in the reminder e-mail.

8.5 Recommendation for further research opportunities emanating from this study

The following suggestions could be considered for future research studies and were not considered during this study. This research could be expanded by adopting an international comparative research approach. The ethical approach to sustainability of other mining companies, especially those investing foreign money in the country, could be explored. A further research study could adopt a qualitative research approach and conduct structured interviews with selected respondents to gain an in-depth understanding regarding the factors the respondents consider to be influencing their comments.

There is a fundamental mind-shift required to incorporate supply chain into the organisational network of sustainability management, especially in terms of the cradle to grave process of the product. This study could contribute to the area of responsible sourcing that translates to responsible waste management in a sustainable manner. Further research could also investigate how closely environmental codes of conduct adhere to, or how far do they deviate from the original ideas stated in the Brundtland Report.

8.6 Conclusion

The purpose of this research was to determine if corporate codes of conduct, as interpreted by the employees, contribute to sustainable development in the mining sector. Barkemeyer *et al*. (2014:4) asserts that “sustainable development has gained widespread political and public authority”. Furthermore, he holds that “corporations have generally embraced the notion of sustainable development, acknowledging the need to move from a narrow, technical understanding of their social and environmental impacts towards identifying their wider role in society”. This study confirms this.

One prominent tool that could be used for achieving sustainability in the mining industry is the mine’s code of conduct, drawn up by the companies themselves or by the industry

associations or chambers of commerce/chamber of mines: “Clear and meaningful principles in codes of conduct” can help a mine to “improve its sustainability performance and to integrate this goal into its corporate culture” (Norman and MacDonald, 2003). However, one may ask to what extent such codes of conduct contribute towards sustainable development in practice? This is the key question that I aim to answer in this research.

The literature study indicated that environmental ethics is still an evolving philosophy and that the unsustainable use of natural resources is becoming more evident in modern-day operations. This study revealed that sustainability in the mining sector is not motivated by an ethical approach but driven by compliance with legal requirements. One may argue that development and growth are still based on a frontier mentality, particularly at the coal face. Within the South African context, no research study assessing the impact of an organisation’s environmental policy, or environmental code of conduct, on sustainable development could be found. Therefore, to improve a mining organisation’s practice by better understanding specific environmental ethical challenges, new insight into the environmental ethical approach of an organisation is necessary. The result of the survey indicates that, although sustainability is in the vocabulary of mining organisations, and although they are moving ahead on sustainability, the emphasis is still on pleasing the lawmaker. This left me with the question if environmental ethics is just a question of relative morality – is it only applicable when it suits the purpose? The role of the national government in regulating the environmental impact activities of mines is the starting block and for most mines, that is their target. From the study it is evident that there are no views, or planning, to go beyond that.

Done correctly, mines have enormous potential to affect change in their communities and the environment by investing in corporate social responsible (CSR) initiatives. My literature search has shown, however, that CSR is most usually interpreted from an anthropocentric perspective.

Currently, and more so in the future, sustainable innovation will be crucial. Improving the current mining methods, the use of resources, waste management and being informed of the benefits of sustainable development and the catastrophic results of the loss of biodiversity, will be the order of the day. Despite the solid legal foundations and new knowledge, mines are not yet fully leveraging the potential that sustainability has to offer, neither are they aware of the destructive effect of ecosystem degradation, hence the lack of a deep rooted environmental ethical approach.

What is apparent in the findings is that there is no doubt that many companies are saying the right things but the degree to which their actions match their words is the biggest area of conjecture and alarm. My broad conclusion is that mining companies are making strides in terms of incorporating sustainability into their strategies and are seeking to minimise environmental impacts, albeit not from a voluntary basis. However, there is still a huge amount to do in moving from theory to practice. Fully operationalising sustainability with complete understanding of the holistic nature of environmental systems should be the next step. Grappling with these issues, and cementing an ethical approach to sustainability, will be the challenges in future.

As a species, mankind has been a tour-de-force on the planet. We have been changing the face of the planet ever since our ancestors took their first steps out of Africa. Wherever mankind has settled on the planet, a significant change to the landscape and a decrease and extinction of fauna and flora populations followed. Fossil record is littered with the leftovers of human invasion of the continents. We have been changing our natural world for much longer than most people realize.

This raises the question if human beings, as a species, can take care of the environment? Every living thing on earth evolved to fit the natural environment in which they live but only humans have been able to manipulate the natural environment to fit themselves. Today, we are using resources faster than it can be replaced, we are destroying the habitats of countless species, even exterminating them. We cannot continue this trend forever. If we

continue to exploit our natural resources at the current rate and method, we must be conscious of the stresses we put on the environment.

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ANNEXURE 1
LETTER TO THE HR DEPARTMENTS

Dear Sir /Mm

I am currently enrolled at Stellenbosch University for a MPhil in Environmental Ethics. My research topic is: "*Do corporate Environmental Codes of Conduct make an inherent contribution to Sustainable Development in the mining industry*". The Ethics Committee of the University requires from me to obtain permission to do the study from the institutions' whose employees I want to interview. This permission letter will be attached to the questionnaire. My interview will be in the form of an electronic questionnaire and my target group is middle and higher management from three different mining companies. I will be grateful if permission could be granted to send the questionnaire to my selected target group. For ease of reference and for your information, I have attached the following:

1. A copy of the questionnaire
2. A consent form to be completed by the respondent

The report will be made available to Exxaro/ DeBeers Group/ Anglo Gold Ashanti if so requested.

Your kind consideration at soonest of my request will be appreciated.

Kind regards

Charl van der Merwe
Student number: 19629923
CER ref no:
E-mail address: cjvdm53@gmail.com
Cell no: 083 415 2590

ANNEXURE 2
PARTICIPANT INFORMATION LEAFLET

TITLE OF THE RESEARCH PROJECT: DO CORPORATE ENVIRONMENTAL CODES OF CONDUCT MAKE AN ESSENTIAL CONTRIBUTION TO SUSTAINABLE DEVELOPMENT IN THE MINING SECTOR?

REFERENCE NUMBER: SU-HSD-002997

PRINCIPAL INVESTIGATOR: CHARL v/d MERWE

ADDRESS: DEPARTMENT OF PHILOSOPHY, STELLENBOSCH UNIVERSITY

CONTACT NUMBER: Dr Susan Hall: 021 808 2205

Dear Colleague,

I am currently a Masters candidate at the Philosophy Department at Stellenbosch University under the supervision of Dr Susan Hall and invite you to participate in a research project that aims to investigate if corporate environmental codes of conduct make a contribution to sustainable development in the mining sector.

The document presented to you is a semi-structured interview designed to gather the necessary data to assist me in completing my research. Your knowledge and experience are considered one of those that may have a significant value to this research project. Please take some time to read the information presented with the questionnaire and contact me if you require further explanation or clarification of any aspect of the study.

Your participation is **entirely voluntary,** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part. This study has

been approved by the Research Ethics Committee: Humanities, at Stellenbosch University and will be conducted according to accepted and applicable National and International ethical guidelines and principles.

Corporate offices frequently declare in annual and other reports their commitment to sustainable development. More often however, negative reports on environmental management and misconduct is published in the media. This study will investigate both specific and general issues with regards to corporate Environmental Codes of Conduct and Policies' contribution to sustainable development. From the study it will also be established if this code of conduct or policy is purely an anthropocentric approach to environmental care or is it an unquestionable ecocentric approach.

If you are willing to participate in this study, please sign the attached Declaration of Consent and include it in your response

Your input will be much appreciated and valuable to reach the aim of this study. I thank you for your time and effort in completing this interview

Yours sincerely
Charl v/d Merwe
Principal Investigator
cjvdm53@gmail.com
+27 83 415 2590

DECLARATION BY PARTICIPANT

By signing below, I ……. agree to take part in a research study entitled **Do Corporate Environmental Codes of Conduct make an essential contribution to Sustainable Development in the Mining Sector?**

I declare that:

- I have read the preceding information leaflet and it is written in a language with which I am fluent and comfortable.
- I was presented an opportunity to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part in it.
- I understand and agree that there is no compensation whatsoever for participating in this study.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....……. On (*date*) ……...……...

.....

Signature of participant

ANNEXURE 3

COPY OF THE QUESTIONNAIRE

An Assessment of Employees' Perceptions of Approaches to Sustainable Management in Business

Section 1: Qualification and Job Experience

1. Please indicate your highest educational qualification
   - ☐ Grade 12
   - ☐ Diploma/ degree
   - ☐ Postgraduate
   - ☐ Others, please specify

2. What is your formal designation in your organisation?

   _____

3. How long have you been in this position? Please choose and circle one.
   - ☐ 1 – 3 years
   - ☐ 3 – 6 years
   - ☐ 6-10 years
   - ☐ 10+ years

4. Indicate the level at which you operate:
   - ☐ Jnr Management
   - ☐ Middle Management
   - ☐ Snr Management
   - ☐ Executive
   - ☐ Other, please specify _____

5. Which of the following best describe where you work?
   - ☐ Corporate
   - ☐ NGO
   - ☐ Government
   - ☐ Mines
   - ☐ Manufacturing industry
   - ☐ Construction
   - ☐ Other, please specify _____

Section 2: Sustainable Management Practices used in your organisation

Business or corporate sustainability is defined as the management and coordination of environmental, social, and financial demands and concerns to ensure responsible, ethical, and ongoing success. In a broader context, social, environmental, and economic demands are considered the three pillars of sustainability. Within the corporate world, they are also referred to as the triple bottom line.

In traditional corporate cultures, social and environmental concerns have typically been considered in conflict with financial goals because alternatives typically require investments in infrastructure. The goal of sustainability requires a more extended timeline for return on investment, but once initial investments are made, they can lead to increased profitability. Similarly, investments in socially ethical practices may initially cost business money but typically lead to enhanced recruitment, branding and public relations, which all tend to lead to increased profitability.

In this study, sustainability refers to the **environmental** concerns.

In the following questions, unless otherwise indicated, circle the number of the most probable answer.

6. In your company, what is your manager's response to sustainable development?
   - Supportive
   - Not supportive
   - Do not know

7. How serious is sustainable development taken at the highest level of management?
   - Not seriously
   - Seriously
   - Very seriously

8. Do you know your organisation's environmental policy?
   - Yes
   - No
   - Not aware of a policy

9. Is sustainability embedded throughout your organisation, in other words, is it playing a frontline role or is it still largely a back-office function?
   - Yes
   - No
   - Not aware of a policy

10. Does sustainability feature in agenda setting of meeting?
    - Yes
    - No

11. Are sufficient financial resources allocated to sustainability in your organisation?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know

12. Will the sustainability budget increase next year in accordance with the budgetary increases in the rest of the company?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know/ rather not say

13. At what level of seniority is the head of the Sustainability Team?
    - ☐ Junior management
    - ☐ Middle management
    - ☐ Senior management
    - ☐ Executive management
    - ☐ Other, please specify _____

14. How many staff members are employed in your company to work exclusively on sustainability?
    - ☐ 0 – 5
    - ☐ 5 – 10
    - ☐ 10 – 15
    - ☐ 15+
    - ☐ Do not know

15. Do you employ any external organisations to assist / advice with your sustainability strategy?

- ☐ Yes
- ☐ No
- ☐ Do not know/ rather not say

16. A core part of the sustainability team's responsibility is: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree and 5 = strongly agree.

STATEMENT	**1**	**2**	**3**	**4**	**5**
Executing sustainability strategy					
Sustainability training & mentoring					
Sustainability auditing					
Sustainability monitoring					
Sustainability legal compliance					

17. In order of importance, which departments does your sustainability strategy directly impact upon?

- ☐ Supply chain/Procurement
- ☐ Finance
- ☐ HR
- ☐ R&D
- ☐ Operations
- ☐ Other, please specify _____

18. How important is sustainability in the following: 1 = not important; 2 = somewhat important; 3 = important and 4 = very important.

STATEMENT	1	2	3	4
Employee engagement: Product development				
Engaging stakeholder groups				
Securing sustainable supply chains				
Reputation preservation				
Impact response				

19. Does sustainable development lead to savings for your business?

- ☐ Yes
- ☐ No
- ☐ Do not know

20. Do you feel confident that your company is accurately measuring the impact of its sustainability activity?

- ☐ Yes
- ☐ No
- ☐ Do not know

21. Does your organisation have an active/planned sustainability engagement strategy for the following groups?

STATEMENT	YES	NO
Governments		
NGO's		
Customers		
Media		
Associations		
Academics		

22. Which one area holds the single most exciting opportunity for your organisation in 2016?

- ☐ Sustainable innovation such as Green energy
- ☐ Beyond Legal compliance: best international practice
- ☐ Reduced water use target, resource savings
- ☐ Embedding a sustainable culture at work and at home
- ☐ Other _____

23. How important were the below issues for your organisation in 2016 where 1 = not important; 2 = somewhat important; 3 = important and 4 = very important.

STATEMENT	1	2	3	4
Environmental impact assessments (EIAs)				
Creating a culture of sustainability				
Community support programs				
Minimising water use				
Waste management				
Engaging NGOs and multi stakeholder groups				
Communicating success in sustainable projects				
Identifying and eliminating sustainability risks				
Carbon footprint reduction				
Legal compliance				
Increased sustainability transparency				
Identifying & evaluating current and historical impacts for remediation				

24. Which office/ position ultimately takes responsibility for sustainable development in your organisation? _____

25. In your organisation: Which position does the Head of Sustainability ultimately reports to? _____

26. What have been some of the sustainability challenges you experienced in executing your job?

_____

_____

The definition of biodiversity refers to the amount of diversity between different plants, animals and other species in a habitat at a particular time and often impacts on the effective and efficient operation of planned activities. Biodiversity requires a skill that enables the management of our natural resources.

27. In your organisation is biodiversity management:
    - ☐ An emerging area/department or
    - ☐ Is it well established?
    - ☐ Do not know

28. In your organisation, is the development of biodiversity skills / knowledge an ongoing activity?
    - ☐ Yes
    - ☐ No
    - ☐ If **Yes**, please share: _____

29. Are you comfortable to discuss the topic of environmental offset areas?
    - ☐ Yes
    - ☐ No

30. Would you promote the concept of environmental offset areas?
    - ☐ Yes
    - ☐ No

31. A green economy is defined as “one that improves human wellbeing and social equity while significantly reduces environmental risks and ecological scarcities”. Is it economically feasible?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know

32. There is a close correlation between economic growth and environmental degradation which also bears a cost. Is it thus possible to be economical profitable?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know

33. Is it morally wrong to be depleting the earth’s resources faster than what it can be replenished?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know

34. Does your company promote recycling?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know

35. Does sustainability have environmental, economic, and social dimensions?
    - ☐ Yes
    - ☐ No
    - ☐ Do not know

36. Do you believe your organisation to have an ethical approach to sustainability management?
    - ☐ Yes
    - ☐ No

37. Please indicate any comment you might have regarding the topic.

    _____

    _____

    _____

Thank you for your participation.
